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AN INTRODUCTION TO TEACHING

AMERICAN TEACHERS COLLEGE SERIES

JOHN A. H. KEITH AND WILLIAM C. BAGLEY, *Editors*

INTRODUCTION TO TEACHING.....BAGLEY AND KEITH
JUNIOR HIGH SCHOOL CURRICULA.....HINES
PROCEDURES IN HIGH SCHOOL TEACHING.....WAPLES

Other volumes in preparation

AN INTRODUCTION TO TEACHING

BY

WILLIAM C. BAGLEY

AND

JOHN A. H. KEITH

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PREFACE

The present volume is the first of a series of books designed expressly for students of collegiate grade in professional schools for teachers. Forthcoming volumes of the series will treat in detail the various subjects that are now recognized as important in the professional education of teachers, including not only psychology, measurements, administration, management, curriculum-organization, and the technique of teaching, but also the materials of elementary and secondary education considered from the professional point of view. The books will be prepared by specialists in the several fields under the general direction of the editors. It is not intended, however, that the series shall reflect any single or exclusive theory of education. On the contrary it is the hope of the editors that each book will have an individuality of its own, and that the series as a whole will represent a sincere and successful effort to treat the complicated problems of education with the tolerance, the catholicity, and the open-mindedness that their intricacy and their fundamental importance demand.

Inasmuch as the series will be the work of many persons, extended perhaps over many years, it will have an opportunity to realize this ideal in a measure that cannot be approached by this introductory volume. The writers trust, however, that the following chapters will be found not entirely devoid of the characteristics

just named. The aim has been, through a brief but comprehensive survey of the field, to orient the prospective teacher with regard to the outstanding problems of education, to give him a balanced perspective on disputed issues, to develop in an initial way the meanings of the more important technical terms that his later studies will involve, and to make easier on his part an intelligent choice of a specific field of service.

The first chapter sets forth the advantages and disadvantages of teaching as an occupation. Following this, an effort is made to explain in simple and concrete terms the essential nature of teaching and learning, and in doing this to bring to the student's attention some of the basic problems with which educational theory is concerned. The materials of universal education are next considered primarily for the purpose of showing how these materials have evolved and why they have been accorded so important a place in the programs of the elementary and secondary schools. Succeeding chapters provide an introductory treatment of the psychology of teaching and learning. Here, in connection with each of the larger problems, typical school practices are described and discussed. Chapter X deals with public education as a vast social enterprise, and aims to encourage the student to build up an adequate mental picture of the highly organized service that he is planning to enter. Two concluding chapters consider the personal qualifications important in teaching and the specific qualifications needed for each of the major divisions of the teaching service.

At the end of each chapter are suggestions for further

reading and a brief list of questions, exercises, and problems. The suggested readings are in no sense complete bibliographies of the topics treated in the chapters. The references are chiefly either to non-technical books and articles or to the more elementary technical literature. It is assumed that other courses will go far more deeply into the various topics. Indeed, one justification of a general introductory course lies in the fact that it should make possible in the later courses (especially in the extended curricula) a more advanced, intensive, and thoroughgoing treatment than could otherwise be given.

For advice, criticism, and encouragement in the preparation of the book the writers are under a heavy debt to a large number of their fellow-teachers and to a host of students. A course dealing with the same problem was given in the School of Education of the University of Illinois by one of the writers during the years 1908–1917. Many of the chapters of the book have been presented for criticism to successive classes of normal-school teachers engaged in graduate study at Teachers College, Columbia University. Specific and detailed criticisms of the manuscript have been made by Miss Jane McGrath and Mr. M. J. Walsh of the Indiana, Pennsylvania, State Normal School, by Miss Rosamond Root and Professor I. L. Kandel of Teachers College, Columbia University, and by Professor Thomas Alexander of the George Peabody College for Teachers. The writers are also indebted to Miss Adrienne Moukad and Miss Frances M. Burke for aid in preparing the manuscript for the press.

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JOHN A. H. KEITH

June 1, 1924

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Chapter I

TEACHING AS AN OCCUPATION

Teaching is a fascinating occupation. This is the verdict of conscientious and successful teachers everywhere. Not all of these teachers can tell just why they find their work attractive. Likings of all sorts are difficult to analyze. Often their roots lie very deep, — far beyond the limits to which even the most sincere attempts at self-examination can carry one. Undoubtedly some of the causes that would explain the attractiveness of teaching must be sought in these deep-lying and fundamental impulses. The teacher is in constant contact with youth, and it is natural for the adult to be attracted to and interested in the young, — it is instinctive for the mature to protect and care for the immature. The conditions which surround teaching stimulate and develop this impulse. It is an exacting responsibility and makes a constant demand for the most devoted service; but it is in rendering such service that many people find the richest and most satisfying values of life.

The contagion of youth. — Nor is this all. Inevitably the teacher responds to the buoyancy and hope and

enthusiasm that are the natural attributes of childhood and adolescence. Good teachers stay young through the very contagion of youth. They may grow old in years, but in no other occupation does one have the same stimulus and opportunity to remain young in attitude and enthusiasm. Youth rebuilds its spirit and its dream in its devoted teachers.

New problems are continually presented. — Another reason for the fascination of teaching doubtless lies in the new problems that it continually presents. Though a teacher may spend his or her entire working life in one apparently narrow field of service, — a fourth-grade room, or a rural school, or the English department of a high school, — every class is a new and different class, every pupil is different from all other pupils. There is a never-ending variety in the human materials with which the teacher deals, and this means a never-ending variety in the problems that must be solved. Monotonous, mechanized work takes on the soul-killing qualities of drudgery, and while there is much necessary (and very important) routine work connected with teaching, this need never be for the teacher a purely mechanical process. There is always the possibility of improvement, — of doing even the simplest tasks better than one has done them before.

Teaching stimulates the teacher's mental growth. — Successful teachers also find a source of continuous growth in the materials other than human with which they deal, — in the subject-matter that they teach. Even upon the lowest age-levels of education, these materials are rich and abundant. It is a very serious

mistake to think of the elementary-school subjects as simple and rudimentary; they are, rather, elemental and fundamental. If one studies them aright, they lead out readily and quickly into fields of discovery and investigation that may well challenge the keenest intellect. Successful teachers make numerous excursions into these fields, and come back to their young charges with a fresh equipment. They see old truths in new ways; and this again is a source both of keen enjoyment and of an invigorating mental growth.

Teaching an essential "productive" occupation. — Conscientious and successful teachers find an abounding satisfaction in the social significance of their work. Not only is teaching a field that is replete with opportunities for serving one's fellows, but the service that it renders is indispensable to the life of the community, the state, and the nation. The school, indeed, is the most characteristic feature of modern civilization. Universal elementary education is admitted by all to be the corner stone of an effective democracy, and democracy is the predominant form of social organization among the civilized peoples of the modern world. Teaching, then, is not only an important occupation; under the conditions of modern life it is an absolutely essential occupation. The teacher is actually and essentially a *producer*, — not a producer directly of food or shelter or clothing, which are sometimes thought of as the basic life-necessities, — but a producer of that trained and informed intelligence without which, on a nation-wide and even world-wide scale, modern civilization will quickly crumble into ruin.

Teachers as a group have important collective responsibilities. — Teachers who take their work seriously are coming to appreciate more and more keenly this essential social value of their work. They recognize, too, that their obligations extend far beyond the limits of their classrooms. They recognize that they and their fellows constitute a company of workers to whom a very important collective duty has been delegated. They must think clearly regarding the aims that they should strive to realize. They must formulate well-matured policies which in their judgment should govern the work of the schools. They must place these policies as clearly and cogently as possible before the people as a whole, with whom, under the conditions of a democratic social order, the final decision will rest. This growth of a professional consciousness and the parallel development of a sense of collective responsibility for the guidance of a fundamental social institution are contributing much to the attractiveness of teaching as a life-career.

Some persons to whom the work of teaching will not be attractive. — It goes without saying that the advantages of teaching as a life-occupation will not appeal to everyone. There is to-day so wide a diversity of human occupations that young people may "pick and choose" to a degree that was quite unknown in former generations; and while a hasty decision on the basis of a superficial acquaintance with this or that field of work is not to be encouraged, nothing is more certain than that one should avoid a calling for which one is hopelessly disqualified. Sometimes these disqualifications are due to desires and ambitions that the calling cannot satisfy;

sometimes they are due to temperamental traits which stand in the way of effective work; sometimes they are due to a lack of native ability for which no amount of training can provide a substitute.

Teaching will not satisfy certain types of ambition. — It is only fair to say that a person whose chief ambition is to achieve a wide public recognition — to "win fame" — will find in teaching as such few opportunities for realizing his heart's desire. Many of the most successful teachers are unknown outside of the neighborhoods in which they serve. Others who are known in wider areas are known only to their fellow-workers and not to the public generally. Men and women who teach have not infrequently achieved wide renown in the field of scholarship, — as investigators and writers, — but only in the rarest cases as teachers. Others, whose earlier work in life has been that of the teacher, have won fame as executives, — as builders of great educational institutions, — but their teaching, though often markedly successful, did not bring them fame. Still others have left the work of teaching and have found in business, law, or politics a measure of public recognition which was never accorded to them as teachers. To what extent these facts constitute a handicap to the teaching service it would be difficult to say; but life is full of compensations. Fame is a fickle mistress, and wide fame, by its very nature, can come to but few individuals. Equally certain it is that the distinctive values which the teacher's work involves are substantial and enduring; nor is their possession limited to a few individuals.

The financial handicap of teaching. — Teaching has the ill repute of being an underpaid occupation. This bad reputation is in part unjustified. The general level of teachers' salaries, taking the country as a whole, is not high, but this is due in part to the meager compensation of a large group of teachers — nearly one half of the total number — who serve in the schools of the open country and the small villages. As a group, these rural-school and village teachers are immature, untrained, and transient in the profession; yet they are so numerous that their low wages have a most seriously depressing effect on the general average. The relatively permanent and far better prepared teachers of the towns and cities are much better paid, and although the general level of teachers' salaries, even in these communities, is still below what it should be, the prospects for its gradual advancement are favorable. Under the best of conditions, however, teaching cannot be expected to offer the opportunities for large financial returns that certain other occupations offer, and those persons whose ambitions can be satisfied only by the accumulation of wealth scarcely need be urged to select another calling. Those who seek riches of a different sort will find them in abundance in the teaching service; and even the material rewards, modest though they may be, have a certainty and a stability that more lucrative employments seldom afford.

Certain temperamental characteristics that interfere with success in teaching. — Men and women who are attracted to the work of teaching by one or more of the advantages mentioned earlier in this chapter sometimes

find themselves disqualified for the service by temperamental defects that stand squarely across the path of success. Often they lack patience. They are irritated by the slowness with which some of their pupils learn, and this constant irritation gives a sharp edge to their tempers. They may lack, too, that indefinable quality known as tact which is so important in all occupations in which the human contacts are frequent and intimate. They may have any one of a half-dozen personal defects, which would not interfere in the slightest measure with success in certain other fields, but which none the less constitute a serious handicap to success in teaching. Not all of these personal and temperamental defects are irremediable, and many teachers who have failed in the earlier stages of their work have learned to conquer all obstacles, and in the end have achieved a high degree of success. It is the part of wisdom, however, for the young person who desires to enter the teaching service to take a careful account of his or her personal qualifications for the work.[1] Fortunately the professional schools for teachers can do and are doing a great deal to aid the student in determining whether or not he or she has made the right choice. They are doing much, also, to correct the personal and temperamental defects that can be remedied.

Unworthy motives for engaging in teaching. — Some persons who enter the work of teaching are attracted by apparent advantages of the occupation that are either quite illusory or so obviously an appeal to unworthy motives as to stamp those whom they influence as

[1] This problem is discussed in Chapter XI.

probably unfitted for the responsibilities of the service. Indeed, certain mistaken notions regarding teaching prevail so widely that the actual truth regarding them cannot be too frequently or too forcibly pointed out.

Teaching far from "easy" work. — The relatively "short" working day, the "free" Saturday, and the "long" summer vacation lead many laymen to regard teaching as an "easy" occupation to be shunned by sincere and self-respecting men and women who wish to do their full share of the world's work. By the same token, these features of the occupation sometimes loom large in determining the choice of teaching by men and women of the opposite type, who are looking — openly or furtively — for a soft berth on the voyage of life. It is scarcely necessary to say that those who enter teaching from this motive are more than likely to be bitterly disappointed. The actual work of teaching, it is true, involves relatively short hours as compared with some other occupations, but both the short day and the short week are more than counterbalanced by two other factors: (1) the need of constant, relentless, unremitting concentration throughout the school day; and (2) the multiplicity of necessary tasks and duties that can be accomplished only outside of school hours. As a result, the actual time given to the work during the week is, in the average of cases, well up to the limit usually recognized as a fair maximum for adult workers (forty-four to forty-eight hours), while the most successful teachers usually devote far more time than this to work that is directly related to their teaching. The summer vacation, too, as well as being in part a period of physical

recuperation unquestionably justified by the exacting concentration of the school year, is coming more and more to be devoted in part to advanced professional education.

Teaching as a "stepping-stone" to other occupations. — One of the most serious handicaps to the development of teaching as a profession, — and consequently a most serious handicap to the efficiency of the schools, — has been the appeal that the occupation has made to those who wish to earn money toward preparation for other callings, and often to use the spare hours of the school week (and even the spare minutes of the school day!) in study for such occupations. The evils of this practice are obvious enough upon the slightest reflection.

(1) Teaching, one of the most serious responsibilities that a person can undertake, becomes merely an incidental means to a quite extrinsic end. Instead of dominating as the life-purpose to which one devotes the major part of one's energies, it is taken up as a temporary employment to be abandoned at the first good opportunity to do something else. Under these conditions, attention is divided, tasks and duties are not taken seriously, and the work for which one is paid is likely to be done in a formal, lifeless, perfunctory way.

(2) The practice is manifestly unfair to the teachers who take their profession seriously and pay to it the fine tribute of an undivided loyalty. The pressure of the temporary teacher who is headed for another calling has tended in the past to force upward the "initial" salaries which have sometimes been far more generous than beginners in other fields usually command, and at

the same time to depress the "terminal" salaries which have frequently been little above the beginners' level. The practice also tends to stamp the occupation in the public mind as casual and temporary rather than serious and permanent, thus adding a social handicap to the financial handicap of the permanent teacher.

(3) The most disastrous result, however, is the unfortunate effect on the children who, under this practice, receive their early and most formative training at the hands of successive levies of raw recruits. Not only is the "stepping-stone" teacher unlikely to take his work seriously; he also fails to remain long enough in the occupation to get beyond the level of the novice; or, if he does remain simply because "something better" fails to present itself, he is almost certain to be sour and morose, — a teacher out of all sympathy with his calling. As someone has well said, — "Those who for one moment condone teaching as a stepping-stone to other occupations forget that it is the children of the Nation who are being 'stepped upon' in the process."

Teaching as a "genteel" occupation. — In spite of the growth of the democratic ideal, the notion that certain types of necessary work are menial and degrading still persists. Teaching sometimes attracts persons because it is a "respectable" occupation in the unfortunate meaning of the term, — a meaning for which the word "genteel" is a more fitting expression. The attitude reflected in a choice of teaching that has been determined by this motive is not the attitude that will make for effective service in a democratic school system. No good democrat will ask or expect someone else to do something

that he would be ashamed to do for himself. "As I would not be a slave," said Lincoln, "so I would not be a master." And he added: "That is my idea of democracy. What differs from this, by the extent of that difference, is not democracy." Teaching is one of the "white-collar" occupations, it is true; but this fact adds nothing whatsoever to its dignity or to its worth; and one of its most important tasks is to do everything that it can to correct the cruel and distorted scale of values which recognizes invidious distinctions between the sons of Martha and the sons of Mary.

The professional education of teachers. — Schools play so important a part in modern civilization that all progressive nations have found it necessary to make extensive provisions for the professional education of teachers. In some countries, indeed, no teacher is appointed to a public-school position who has not been carefully prepared in a professional college. In a great and growing country like our own, this ideal is much more difficult to realize than in smaller countries with relatively stable populations and with forms of social organization that place a premium upon permanency in occupation.[1] Thus, while it seems paradoxical that the

[1] This does not mean that provisions have not been made for the professional education of teachers, but rather that the development of the public schools has been so rapid and the rewards of the service so inadequate that only a relatively small number of the teachers needed have taken advantages of such education. The first "normal school" in the United States was opened at Concord, Vermont, by Samuel R. Hall, a clergyman. This was a private venture and was short-lived. The first State normal school was opened at Lexington, Massachusetts, in 1839, largely through the efforts of James G. Carter (1795–1845). Carter was greatly aided in his efforts by the most illustrious of American educational leaders, Horace Mann (born 1796). Mann was a lawyer by profession, and became a member of the State senate. He was deeply interested in public education, introduced a bill providing for a State board of education, and became secretary of this board in 1837. From that time on, he was an educational crusader. It was largely through

richest nation on earth has a larger proportion of transient, immature, and untrained teachers in its schools than has any other nation of approximately comparable rank, the apparent paradox can be easily explained. Not only has our population been growing very rapidly, but the very resources that have induced this growth and which constitute the basis of our national wealth have opened a multitude of occupational opportunities. Occupational stability, especially in the fields of employment that can be used as "stepping-stones," is the exception and not the rule. In spite of the recognized importance of teaching, then, teaching has been in our country "not a *profession,* but a *procession.*"

Within the past two or three decades, however, this situation has been rapidly changing, especially in the urban communities. The public-school service in the cities and larger towns is now fairly well stabilized, and this development has been accompanied by a parallel growth of professional schools for teachers. In some parts of the country, standards of certification have been raised to the point where at least two years of professional education beyond graduation from a four-year high school are required before one is permitted to teach in an elementary school. For high-school service, four years of college work[1] are regarded as the minimal qualification. These standards now prevail generally in

his efforts that the principle of free, tax-supported, secular schools was firmly established throughout the northern states. He also had a large influence in humanizing school government and making the school studies richer and less formal. In his later life, Mann became president of Antioch College in Ohio. He died in 1859. By this time, most of the great reforms for which he had labored were beginning to bear their fruit. The normal-school idea, in particular, spread rapidly from Massachusetts to the other states. By 1870, nearly all of the northern states had one or more of these institutions.

[1] That is, work in advance of a standard four-year high-school education.

so far as the schools of the urban communities are concerned, and in a few states[1] they apply with equal force to the schools of the open country and the villages. Generally speaking, however, the rural-school service is still open to the untrained teacher, — a great misfortune, for, in spite of the rapid growth of our urban population, the open-country and village schools still enroll almost half of the Nation's children.

The importance of a thoroughgoing preparation for teaching. — We shall not at this point discuss the very great importance to the public of having well-prepared teachers to do the work of the schools. It is rather the importance of a thorough professional education to the teacher himself that we would emphasize. Every occupation yields its rewards most generously to those who take its responsibilities most seriously and who strive the most diligently to fit themselves to do its work well. Teaching is no exception to this general rule. Generally speaking, those who find teaching a fascinating occupation are those who have paid the price of hard study, unceasing devotion, and a resolute determination to master a difficult art. Just as clearly, those who have made the largest investment of money, time, and effort in preparation for the work of teaching are those who reap the largest financial rewards. Indeed, the recognition of the importance of professional education has now reached a point where salary schedules for teachers in progressive school systems carry substantial increases in pay for each unit of professional education that the

[1] Arizona, California, Massachusetts, Connecticut, Rhode Island, and New Jersey have most nearly met the standard of a "trained teacher in every classroom."

teacher completes. Probably in no other calling does an added investment in education bring so quick and so certain a financial return.[1]

Much more important in the end, however, are the increased efficiency that comes with extended training and the accompanying satisfaction of doing better work than could otherwise be done. A thoroughgoing professional education gives to the teacher a consciousness of mastery, a comforting margin of strength. Problems there will be in abundance for which even the best of training will not provide ready-made solutions; but these will take their proper place as part and parcel of the day's work, giving to the day's work, indeed, a zest and an interest that it would otherwise lack; they will not be the sources of worry or the causes for panic that they might easily become to an untrained teacher; nor, on the other hand, will the trained teacher fail to recognize them as serious problems, — a mistake that the untrained teacher is likely to make.

Phases of professional education. — It is generally recognized to-day that the professional education of all teachers should begin on the basis of a broad and liberal non-professional or "general" education. In the United States, the prevailing tendency is to make the completion of a full four-year high-school curriculum the prerequisite for admission to professional study. It is for this reason that the typical professional schools for teachers are now called "teachers colleges," this designation having

[1] Experience has shown that, in the long run and in the average of cases, each year of added training for the work of teaching brings an addition of about $200 to the annual salary. In other words, the investment in each year of training may be expected to pay an annual dividend equal to this amount.

replaced in most instances the older term, "normal school."[1]

Sound scholarship as a basis for teaching. — An important task of the modern teachers college is to provide for the prospective teacher a sound basis of scholarship, especially in those fields with which his later teaching will be concerned. It is obvious enough that the teacher should know thoroughly the subjects that he tries to teach. It is less obvious, but equally true, that he cannot have such a mastery without going far beyond the boundaries to which these subjects are necessarily limited in the elementary and high schools. In some of the professional schools, the policy formerly prevailed of depending on the elementary and high schools for "subject-matter," and of limiting the "professional" courses to such subjects as "psychology," "theory," "methods," and "practice-teaching." The tendency to-day is to lay a far heavier emphasis upon the mastery of subject-matter, but to approach this mastery from the point of view of the teacher's specific needs. Thus while the prospective elementary-school teacher will probably find, among the requirements of the teachers college, courses in such subjects as arithmetic, geography, English, and history, he should not conclude that

[1] The "teachers-college" movement owes it name as well as a strong impetus to the development of Teachers College, Columbia University, under the leadership of James E. Russell (born 1864), who became dean of the College in 1898. Among those who have taken an active part in the transformation of normal schools into teachers colleges are: Homer H. Seerley (born 1848), who became president of the Iowa State Normal School (now the State Teachers College) in 1886; David Felmley (born 1857), who was for several years a teacher in the Illinois State Normal University and who became its president in 1900; John R. Kirk (born 1851), State superintendent of public instruction in Missouri from 1895 to 1899, and since the latter date president of the Northeastern Missouri State Teachers College; and John W. Withers (born 1868), who was the first principal of the Harris Teachers College of St. Louis, and who is now dean of the School of Education, New York University.

he will simply "review" the work that he went over in the elementary school. He will find that such courses not only give him a "new view" of those elementary materials but also stimulate him to a degree of mental effort equivalent to that which would be called for by any of the traditional college courses; and in addition he will find in the teachers-college program courses in subject-matter which will have a clear bearing upon his later work but which will not suggest, even by their names, an association with work that he has already mastered.

Training in the art of teaching. — The professional colleges of to-day place a strong emphasis on what may be called the "laboratory" study of teaching; — that is, on the work of "demonstration" and "training" schools. In the demonstration classes, the students very early in their professional study become acquainted at first hand with the way in which skillful teachers adapt subject-matter to the needs and capacities of children. In the training school, the prospective teacher begins the actual practice of his art under close and sympathetic supervision. Sometimes this, too, is begun fairly early in the period of professional education, so that the study of subject-matter, the demonstration of good teaching, and the actual participation by the student in the work of teaching go hand in hand, each helping the others and in turn being helped by them. Thus a thoroughgoing professional unity of the work is insured from the outset. In other schools, there are still rather sharp divisions among the various stages of professional education, — subject-matter and theory coming first, and practice

being postponed to the latter part of the curriculum; but even in such cases, the effort is usually made through demonstration-classes to keep the actual teaching of boys and girls constantly in view as the fundamental objective of the professional college.

The study of education as a science. — Another important phase of professional education is represented by the study of educational science. During the present century, remarkable progress has been made in the experimental investigation of educational problems, and a goodly number of carefully tested facts and principles bearing directly on the work of teaching are now available. These are usually studied in separate courses under such titles as "educational psychology," "child study," "experimental education," "school hygiene," "educational measurements," and the like; but the tendency here, as in the professional study of subject-matter, is to emphasize the unity of all of the work that the professional school represents. Thus almost every course that the prospective teacher undertakes is likely to reflect some of the facts and principles that the scientific study of education has revealed. The science of education is not a self-contained, detached body of knowledge; it has its meaning and its justification in the light that it throws upon the actual problems of teaching and learning. One cannot teach without teaching *something* to *somebody;* hence the science of education has dynamic and intimate relations both to the subject-matter that is taught and to the persons to whom it is taught, as well as to the manner or method of teaching. There is general agreement that its lessons can best be

mastered by the prospective teacher when presented in close connection with their application to the tasks involved in teaching specific and particular subjects to actual flesh-and-blood boys and girls.

The broader study of educational theory. — The modern teachers college, however, does not neglect the more comprehensive and penetrating study of educational theory. This contributes to the student's understanding of the art of the teaching and consequently to his mastery of this art. Beyond this it is made necessary by the increasing participation of teachers in the construction of broad educational policies. As has been pointed out, the teacher's responsibilities extend beyond the limits of the classroom to the council rooms and the halls of deliberation where the aims of education as a great social enterprise are discussed, and where programs for the realization of these aims are framed, criticized, and evaluated. Some measure of preparation toward an effective rendering of this collective service must be provided in the professional schools. Most teachers colleges offer courses that have this broader preparation as their chief objective. Of great importance in this connection are such studies as biology, sociology, economics, and history, including the history of education itself. As the capstone to all of these, there may well be a course in the philosophy of education which brings together the facts and principles involved in the preceding courses, and encourages the student to formulate for himself a "working theory" of education.

Brief *vs.* extended preparation for teaching. — The program that has been very briefly sketched in the pre-

ceding section cannot be mastered in a brief period. The present minimal standard of two years following graduation from a four-year high school is far too restricted a preparation for any branch of the teaching service. To increase this period to three years will not be an impossible achievement; one of the states (New York) has already made such an extension, and it is probable that a four-year period will ultimately be established. In the meantime, the problem is being partially solved in another way. Facilities are now provided very generally for the professional education of teachers *in service*. "Extension" or "extra-mural" courses are offered by the normal schools and teachers colleges, and by liberal-arts colleges and universities, — courses which teachers can take during the school year. These can be adapted without serious difficulty to the hours and needs of teachers in service, and credits earned in this way will count toward the Bachelor's degree and in some cases toward the advanced Master's and Doctor's degrees. Even more significant has been the development of summer sessions in universities, teachers colleges, and other institutions. This development has been going on for about thirty years, and has already reached a point where nearly one fourth of all of the public-school teachers of the country themselves attend school in the summer.

The ideal of continuous growth. — While the rapid development of extension and summer-session courses has been stimulated by the policy of granting increases in salary for added increments of professional education, the movement had its beginning and still derives a large

part of its force from the earnest desire of teachers to grow in their work. It reflects, in other words, a conscious ideal that is coming more and more generally to characterize the teaching profession, — the ideal, namely, of *continuous growth,* the accepted conviction that *the successful and conscientious teacher must always be a learner.* In the broadest sense, the professional education of the teacher is never finished. It is a process that may well continue during the longest life; a process, too, that during the longest life may easily mean the continually increasing effectiveness of the teacher's service and a continually increasing measure of satisfaction and happiness in his work. From this point of view, the profession of teaching now has a very marked advantage over many other occupations. The conditions that surround its service both permit and demand the kind of growth that in other human callings is very largely limited to the initial periods of training and apprenticeship.

The ideal of growth as a check to pedantry. — The development of this ideal is also doing much to counteract what is perhaps the most serious disadvantage of teaching as a life-long occupation; namely, the tendency of continuous teaching to develop that undesirable quality known as pedantry. While the conventional caricature of the schoolmaster with its exaggeration of pretense, smugness, and self-complacency is far from a true picture of the type, it none the less points by its very overemphasis to a real danger that the calling involves. Mr. Graham Wallas[1] has developed an interesting the-

[1] Graham Wallas: *Our Social Heritage,* pp. 150 ff. Yale University Press, 1921.

ory by which he attempts to explain this tendency of continuous teaching to develop a pedantic attitude. Recognizing that teaching is for many adults a fascinating occupation, he assumes that there is an instinctive or inborn tendency to guide and instruct the young of the species; but he also maintains that this instinctive tendency is intermittent in its appearance, resembling in this respect the parental instincts. He says:

> "Mankind . . . have a teaching instinct. That instinct can be observed in many 'born' male teachers, and in a rather larger proportion of women teachers, and particularly of women who, at the age of early motherhood, are teaching very young children. But the teaching instinct was evolved under conditions where men and women taught during only part of their lives. The professional teacher now teaches every day; he forms, indeed, the habit of teaching; but habit, when it overrides nature, produces severe nervous reaction; all regular work . . . is unnatural to us. . . . Habituation is easier for the teacher because he is dealing with a quickly changing series of immature minds. After every year . . . he begins with a new class, and tends to repeat his most successful sayings, and to emphasize, without the sense of humor and proportion which comes from adult criticism, his pet ideas. When the mediaeval Italian laity turned the word 'pedagogue' into 'pedant,' the word and its meaning was understood and adopted from one end of Europe to the other."

It is probably true, as Mr. Wallas contends, that all regular work is unnatural. In this case, all occupations that are pursued throughout adult life labor under a disadvantage similar to that of teaching. Addison,[1] indeed, in commenting on this very quality of pedantry, stoutly maintained that it was not peculiar to the teacher. The solution of the problem would seem to lie,

[1] See *The Spectator*, No. 105.

then, not in making teaching a temporary and casual occupation, but in providing explicitly to offset these narrowing and stultifying tendencies. The development of the ideal of continuous growth, and the parallel development of facilities for the education of teachers in service, are by far the most notable and effective steps that have so far been taken toward this end. Mr. Wallas[1] has clearly recognized this fact:

> "It is fortunate that the process of being taught, itself gives nervous relief when exchanged for that of teaching. One realizes one of the causes which lent zest to mediaeval university life, when one reads Chaucer's description of the Clerk of Oxenford, 'and gladly would he lerne and gladly teche.'"

The relation of pre-service education to in-service education for teachers. — It would be a mistake, however, for the prospective teacher to conclude that the many facilities now afforded for in-service education will justify an abbreviated period of pre-service education. Extension and summer-session courses cannot be a substitute for a prolonged period of uninterrupted, systematic training. There is an unquestioned value in a coherent and well-articulated curriculum of studies and activities steadfastly pursued from start to finish. There is, too, an unquestioned advantage in being immerged for three or four years in an institutional atmosphere that is surcharged with professional idealism. To have all or most of the initial professional education in smaller fragments is to miss a large part of these values and advantages. The prospective teacher will be most fortunate if he can pursue an uninterrupted curriculum until he has reached

[1] Wallas, *op. cit.*, p. 153.

the level of attainment and proficiency that is represented by the Bachelor's degree. He will be unfortunate, however, if he interprets the conferring of this degree as meaning the completion of his professional education. Ultimately, no doubt, the in-service agencies will limit themselves to specialized, advanced, or graduate study. Even now it is clear that the teachers who profit the most by the extension and summer-session courses are those who have had the most substantial pre-service education.

The differentiation of pre-service education. — It is the first unit, then, of professional education that the regular sessions of the normal school or teachers college usually represent. It is well to emphasize the unitary character of this initial work. The term "curriculum" is now used to designate a unified and coherent sequence of separate "courses," all of which coöperate toward a given end or objective. Most of the teachers colleges offer several "curricula," and the total of the offerings is known as the "program of studies." Each curriculum, however, is a unit in that the combination of courses which it represents is pointed toward a definite objective. There may be one curriculum for kindergarten-primary teachers; one for teachers of the intermediate grades; one for teachers of the upper grades (or in place of this, several related curricula for different types of teaching in the junior high school); one for teachers in ungraded rural schools. Some also offer curricula (or programs from which individual curricula may be constructed) for special types of high-school teachers (English, Latin, history, mathematics, science). In other words, the

professional education of teachers, even in its preliminary stages, is rapidly coming to be specialized; but the preparation for each special field is a unit in itself, although there will obviously be numerous courses that are common to several different curricula, and some courses that are common to all.

Choosing a curriculum. — This differentiation of professional education is made necessary by the differentiation of the teaching service. The time is long past when one person can be expected to do well the teaching demanded on all of the educational "levels," or in all of the school subjects. One must select a special field, and one must furthermore make this choice fairly early. In a few teachers colleges, the choice must be made at the very outset; others, however, provide a longer or shorter period of common courses before differentiation is begun. In any case, the work of the first term or the first semester is likely to reveal to the student the advantages and disadvantages of the various specialized fields, and to give some inkling of the qualifications that each field demands. The present volume aims, among other things, to aid the student in making a wise choice by describing the various fields of the teaching service, and by suggesting methods of studying these fields and methods of determining whether one is qualified for the service which each represents.

The importance of an acquaintance with the field of education as a whole. — One of the most important factors in making a wise choice of a special field of service, however, is to see education as a whole, — to get a bird's-eye view of the work that the schools are called upon to

do. This is not to say that a full and thorough understanding of education either as a process or as an institution can be attained at the outset; but, in a relatively brief period of serious study, through a broad survey of the field, one may acquire an initial understanding of its varied and interesting problems. It has been primarily to help the student in fashioning this preliminary scaffolding for his later construction that the following chapters have been written.

Questions, Exercises, and Problems

1. From your experiences with schools and teachers, make a list of the features of the teacher's work that attract you and a list of the features that you find unattractive.

2. Recall the best teacher that you had in the elementary school. Make a list of the qualities in which this teacher apparently excelled. Recall the best teacher that you had in high school and make a similar list of qualities. The ten qualities most frequently noted by all members of the class may be well studied with the purpose of determining in how far it is possible to acquire them.

3. Make a list of the occupations other than school-teaching which involve teaching activities. In what important ways, if any, do these teaching activities of other occupations differ from those of school-teaching? To which of these occupations, if any, do you think that school-teaching might be considered a legitimate "stepping-stone"?

4. Thomas Wentworth Higginson, in commenting on the grief of the Harvard students over the death of Professor N. S. Shaler, makes this statement: "It left a wonderful impression of the power with coming generations of a single great teacher. Every one of those boys may become a source of power himself — no one can tell which. The author has vast power also . . . ; but it is not brought together in so direct and visible a shape." (*Letters and Journals of Thomas Wentworth Higginson*, p. 347. Houghton Mifflin, 1921.) Discuss the meaning of the last sentence of this quotation.

5. The following terms, important in the technical vocabulary of teaching, have been used in Chapter I: universal education; professional education; pre-service education; in-service education; extension courses; materials of education; professional growth; pedantry; course of study; curriculum; program of studies. Make provisional definitions for these terms, and illustrate each by two or three typical examples.

Suggested References

G. H. Palmer — *The Ideal Teacher*. Houghton Mifflin, 1910.

W. L. Phelps — *Teaching in School and College*, chs. i, ii, iv. Macmillan, 1912.

O. I. and M. V. Woodley — *The Profession of Teaching*, ch. i. Houghton Mifflin, 1917.

G. D. Strayer and N. Norsworthy — *How to Teach*, ch. i. Macmillan, 1918.

E. A. Turner — *The Essentials of Good Teaching*, chs. i, ii. Heath, 1920.

There is an abundance of literature depicting the work of the teacher which the student will do well to become familiar with in connection with his general reading. The following books are suggested:

H. Quick — *The Brown Mouse*. Bobbs-Merrill, 1915.

Angelina Wray — *Jean Mitchell's School*. Public School Publishing Co., 1909.

H. G. Wells — *The Story of a Great Schoolmaster*. Macmillan, 1924.

E. F. Benson — *David Blaize*. Hodder and Stoughton, 1916.

W. H. Smith — *The Evolution of Dodd*. Rand, McNally, 1883.

A. Patri — *A Schoolmaster of the Great City*. Macmillan, 1917.

G. M. Martin — *Emmy Lou*. Grosset and Dunlap, 1902.

K. D. Wiggin — *Rebecca of Sunnybrook Farm*. Houghton Mifflin, 1903.

Chapter II

WHAT IS TEACHING?

In a modern schoolroom, a teacher has many tasks that do not constitute teaching in the strict sense of the term. As a condition of doing well the work that should be done, order must be maintained; the temperature of the room, the circulation of the air, and the lighting must be looked after; the bodily health of each child must be cared for; an appropriate sequence of work and relaxation must be organized; books, maps, charts, pencils, paper, and other material equipment must be provided, cared for, and properly used. It is true that there are opportunities in connection with each and all of these details to teach certain important lessons; but even granting these possibilities, it is clear that good order, comfortable and healthful surroundings, and material equipment exist primarily as means to another end, — they exist and are important chiefly because they make good teaching and effective learning possible.

Teaching and learning. — The union of the terms "good teaching" and "effective learning" gives a clue to what teaching is at basis. To stimulate, encourage, and direct learning is the soul and substance of the art of teaching. It is the pupil himself who must learn. Without activity on the pupil's part, — without some dynamic expression of a "will to learn," — the efforts of the best teachers will be futile.

What is meant by "learning"? — Before we can understand what teaching is, then, we must first understand what learning is. It is not difficult to define learning in simple terms, but it is very difficult to frame a simple definition that will do full justice to the importance and the complexity of the process. The truth is that there are several kinds of learning; or, if we wish to think of learning as a unitary process, we must at least admit that this process varies with the point of view from which it is studied. The more important of these different kinds of learning (or of the different points of view from which learning may be studied) will be considered briefly in this chapter as a preliminary to the more detailed treatment which subsequent chapters will undertake.

1. *Learning means a change in behavior or conduct.* — An important step toward understanding the learning process is to think of it as meaning some change in behavior or conduct. John knows how to throw a curved ball and James does not. James watches John carefully and sees just how he grips the ball and how he throws it. James then practices and gradually develops the requisite skill. He has learned what is for him a new *art;* he has acquired a new *control* over his muscles; he can *do* something that he could not do before.

The illustration is a simple one, but it typifies clearly a fundamental condition which all true learning must meet. Whether directly or through indirect and devious channels, learning produces a change in the way in which the learner acts. This is clear enough in the mastery of definite skills or arts, but it is equally true, although not at first glance so clear, when we consider other types of

learning. We shall turn to these directly; for the present let us look at this process of changing conduct or behavior from another point of view.

2. *Learning means the formation of new "bonds" or connections in the nervous system.* — From his study of physiology, the student will recall something of the way in which the muscles of the body are controlled and particularly of the part that the nervous system plays in this process. While the nervous system of man is a very complicated structure, its general "pattern" is not difficult to comprehend. It is essentially a very delicate apparatus for controlling the muscles in such a way that movements of the body may be made in harmony with conditions existing in the outside world and in harmony with the needs of the body as related to these conditions. The nervous system is so constructed that it (1) "picks up" impressions or "stimuli" which represent external conditions, (2) interprets these impressions with reference to the needs of the organism, and (3) stimulates the muscles so that they will make the movements necessary to meet these needs.

All this is accomplished by a marvelous network of very sensitive filaments called "neurones." A neurone is a unit of living matter (protoplasm), — technically a "cell," — consisting of a rather substantial body from which extend long thread-like arms. Each of the external sense-organs (the eye, the ear, the taste-buds, and the like) contains the ends of "sensory" neurones which "pick up" impressions that inform us of the outer world. There are also internal sense-organs in the muscles, tendons, and joints and in the vital organs that

constitute the viscera. These internal sense-organs contain the ends of sensory neurones which inform us of the condition of the body itself. The sensory neurones convey to the central nervous system (the spinal cord and the brain) each its own particular variety of impression, — whether of light, sound, smell, taste, pressure, temperature, movement, hunger, thirst, pain, or what not. In the central nervous system other neurones, called "association" neurones, receive the incoming impressions and distribute them to still other neurones, ("motor" neurones) which send the requisite "orders" outward to the muscles.

It is a fairly well-established inference that the way in which one acts is determined by the way in which groups of neurones have been connected, and consequently that a change in conduct or behavior means the formation of new "bonds" or connections among the neurones. When James learned from John how to throw a curved ball, it may be inferred: (1) that by watching John he was able to initiate in his own nervous system the same kinds of bonds that John had already built up in his nervous system; and (2) that by practicing the movements, he gradually strengthened these bonds until the necessary movements followed one another as a matter of course and the "art" was mastered.

This explanation of learning as the formation of new bonds among neurones has the advantage of enabling one to picture the process as it probably goes on in the nervous system. It helps one to understand what learning probably means from the point of view of the anatomical structures involved and the physiological functions that

are fulfilled by these structures. There are, however, certain important phases of learning that it does not satisfactorily explain, perhaps because our knowledge of what actually goes on in the nervous system is still so scanty.

3. *Learning means mental activity.* — It is necessary, then, to approach the problem from still another point of view. What do we mean when we say that John "knows how" to throw a curved ball while James does not? It is true that John has formed certain bonds or nerve-connections that James lacks, and it is true that as James learns to throw a curved ball he must form in his own nervous system a series of bonds similar to those that James already possesses. But before he can do this, and as an important part of forming the connections, James must have what we have called an "idea" of the way in which the movements are made. He must see the process in his "mind's eye," as we say, so that he may "know how" to direct his muscles. It is for this reason that he so carefully watches John as the latter grips the ball. He is trying to form a mental picture or image of the way in which the ball is held, and then he strives to govern his own muscles accordingly. When we speak of a "bond" or a "nerve-connection," we are speaking of something that is physical in its character; when we speak of "ideas," "images," and "mental pictures," on the other hand, we are speaking of something that is essentially not physical but mental — although we assume that physical or physiological processes are back of this mental something. We know little of these physical and physiological processes, however, but by

examining our own consciousness we can come to know something about the mental processes, and we can easily and safely conclude from our own experience that they are of very great importance in learning. Indeed it is safe to say that all kinds of learning that are worthy of the name involve *mental activity*.

4. *The formation of clear ideas is probably the most important step in learning.* — We may go even beyond this and maintain that in all probability the most important phase of learning is that which is involved in the formation of clear ideas. If one "knows how" to reduce a compound fraction, or if one "knows how" the map of Australia looks, or if one "knows how" corn is raised, it means that one has an equipment of ideas that may be used to guide or control conduct. To teach is to stimulate, encourage, and direct the learner to build up a series of such ideas. It should be remembered, however, that the ideas — the "knowledge" — cannot be looked upon as an end. It is always the *conduct* of the learner that is the final test; the proof of learning is the ability to act consistently with the knowledge learned.

5. *Improvement in conduct or behavior usually means forming clearer ideas through repetition.* — It is also true that one may have fairly clear ideas and the willingness and ability to act consistently with these ideas, and yet lack readiness and skill in such action. An important part of teaching is concerned with the repeated performance of what has been initially learned until a desirable degree of proficiency in its use has been acquired; but even this involves, frequently if not always, a refining and clarifying of the ideas that guide conduct. Gener-

ally speaking, when *mental* activity ceases, *learning* ceases. This happens as a matter of course when an art has been learned so well that one does not have to "think about" how to do it, — when one does not have consciously to guide the movements by means of ideas. Thus a large part of our behavior becomes habitual or mechanical with repetition. And yet if the behavior is not satisfactory, — if the mechanized process is not so efficient as we would like, — there is only one way to improve it: namely, by improving our ideas, by learning better "how."

Summary: provisional definitions. — Learning, then, is essentially a *mental* process. It involves *mental* activity. The learner must perceive, he must form images, he must remember, he must think, he must *consciously* apply what he learns.

Teaching stimulates and directs these mental processes, — this mental activity, — of the learner. It does not and cannot be a substitute for the learner's activity. It may show, explain, expound, clarify, guide, reveal, encourage, reward, inspire; (indeed, if it bungles its job, it may obscure, misdirect, depress, and discourage); but it cannot by any legerdemain or miracle become a substitute for the primary condition of all learning, — namely, the active mental effort of the learner himself.

Some important facts with regard to teaching and learning may be summarized from the foregoing discussion:

1. Teaching is the art of stimulating, encouraging, and guiding learning.

2. Learning is primarily a process of forming clear ideas that will serve to guide and control behavior or conduct.

3. Repetition is usually necessary to perfect and crystallize learning, but repetition to be most effective must mean also a further clarification or refinement of ideas.

4. Learning, therefore, is essentially a mental process.

Some difficulties in applying these definitions. — There are certain phases of teaching and learning, however, which do not seem at first glance to be covered by these definitions. The emphasis on conduct or behavior as the important end in all learning is often puzzling to the student. The "ideas" learned in the study of arithmetic, grammar, and hygiene have a very clear and direct bearing upon conduct. It is obviously advantageous to "know how" to add, subtract, multiply, divide, manipulate fractions, and compute interest. It is obviously advantageous to "know how" to frame a sentence so that its structure will be grammatically correct and its meaning clear. It is likewise important to "know how" to live healthily, to gain and maintain physical vigor, to avoid disease. But other ideas are taught and learned for which a direct and important influence upon actual conduct is not so easy to demonstrate. Every American child, for example, is expected to learn something of his country's history, — to build up certain "ideas" about Washington, Franklin, Lincoln, and a number of other men whose efforts have done so much toward making our country what it is; to gain a clear "idea" of the way in which our government was

established, and how it has developed in the course of a century and a half; to live "in imagination" through some of the great movements that constitute the important episodes of our history, — the development of the West, the anti-slavery movement, the Industrial Revolution, the rise of the nation to a position of international leadership and responsibility.

If the "ideas" learned in the study of history affect life at all, then, it is clear that they do it in a somewhat different way from that in which the ideas learned in arithmetic, grammar, and hygiene affect life. The connection with actual behavior is not always or often so direct and immediate in the former case as it is in the latter case. And yet even the slightest reflection will convince one that the study of history may have and frequently does have very profound influence upon conduct. The ways in which this influence is exerted will be discussed later (see below, pp. 79–87, pp. 241–249); it is sufficient here merely to emphasize the fact as a preliminary to the later discussion.

Again, the pupils in American schools are expected to "learn" something about the masterpieces of literature, music, and the pictorial and plastic arts. In what way will the "ideas" thus developed influence conduct? Certainly the influence may not be direct and immediate, and yet, as we shall point out later, such study may serve to make one a quite different individual from what he or she would otherwise have been.

What has been said in the three preceding paragraphs illustrates again the difficulty that confronts one who attempts to frame simple definitions of such terms as

"teaching," "learning," and "education." The effort at simplification is likely to cover up or leave out of account some very important factors; and when these factors are thus eliminated, the student is likely to infer that they are not very important. This easy inference has been the source of much confusion, not only to young people who are preparing to teach, but also to men and women who for years have been thinking and working in the educational field.

Two varieties of learning. — Some of these confusing difficulties may be avoided by looking at teaching and learning from yet another point of view. We have defined teaching as the art of stimulating and directing learning, and we have defined learning as a process of forming clear ideas that will serve to guide and control conduct or behavior. But where do these ideas come from and what do they represent?

John could throw a curved ball; James could not. James, by carefully watching John, formed the idea of how to grip and throw the ball. But where did John himself get this idea? He learned it from someone else, who in turn had learned it from someone else, and so on back to the first baseball pitcher who either "hit upon" (discovered) or worked out (invented) the "trick."

There are, then, two sources from which ideas are learned. Most ideas we learn from other people who in their turn have learned them from other people; but if we carry the analysis back far enough, we must conclude that some one originally either "hit upon" or more or less laboriously worked out the idea as a new discovery or invention. This new discovery or inven-

tion constituted a brand-new kind of *experience.* Others who borrowed the discovery or invention probably added to it by new experiences of their own, — they refined and improved the idea; but for most of the advances that human life has witnessed, a great deal of credit must be given to those who initiated the advance.

All learning comes through experience. — Quite obviously everyone learns more or less from his own experience; everyone, from his own successes or failures in meeting the situations of life, forms ideas of how to do things. But in the long course of history, experiences have been accumulated and their lessons crystallized so that one living a civilized life to-day, while learning something from his own experience, learns much more by appropriating the ideas that have come from the past experience of the race. This appropriation, let it again be emphasized, must involve the active effort of the learner; it is always in a greater or less degree a process of *reëxperiencing* what others have experienced before, and of gaining through this process the ideas that others have gained and the advantages that are involved in the possession of these ideas as guides to efficient conduct. It is possible for one to "go through the motions" of these accumulated experiences, and not get the ideas at all. One important task of good teaching is to prevent this disaster, and, on the positive side, to insure a true process of reëxperiencing what others have learned.

The two processes of learning, or the two sources of ideas, that we have just contrasted are sometimes spoken of as (1) "direct" or "personal" experience, and

(2) "vicarious" experience. The term "personal" experience refers to what one learns from meeting and mastering the situations that confront one in actual living. "Vicarious" experience refers to the appropriation, — or better, the reëxperiencing, — of the way in which others have solved these problems.

Education as growth. — The fact that individual experience is the primary factor in learning suggests at once that education may be very largely a process of *natural growth;* we know that the body grows in accordance with inborn tendencies when the right kind of food is provided and when the conditions are appropriate for the right kind of exercise. There is, so to speak, an *unfoldment* of the bodily structures and functions that is largely determined from the very outset by natural laws. In the same fashion, it is held, the mind grows and develops in accordance with innate tendencies when the right kind of stimulus is provided, and when the conditions are favorable for the right kind of exercise. There is again an *unfoldment*, — this time, of the mental structures and functions.

Advocates of education as growth: Comenius and Rousseau. — In one form or another, this view of education has been held and advocated by many of the most prominent and influential students of the problem during the past three centuries. Comenius[1] said:

> "There must be no pressure. Learning should come to children as swimming to fish, flying to birds, running to animals."

[1] John Amos Comenius (Komensky) (1592–1670) was a Polish Moravian, who was educated for the ministry and became in later life a bishop of the Moravian faith. He is best known, however, for his great work in education. In 1631, he published a book of encyclopedic character called *The Gate of*

The great French writer on social and educational problems, Rousseau,[1] proclaimed a similar principle:

"The first education should be purely negative. It consists by no means in teaching virtue or truth, but in securing the heart of the child from vice and the intellect from error. If you could do nothing and let nothing be done, if you could bring on your pupil healthy and strong to the age of twelve without his being able to tell his right hand from his left, from the very first lesson the eyes of his understanding would be open to reason. Being without prejudices and without habits, he would have nothing in him to thwart the effect of your care; and by beginning with doing nothing you would have made him an educational prodigy."

Pestalozzi. — The greatest figure in modern education, Pestalozzi,[2] also attributes a large educative influence to the unaided operations of natural tendencies:

"From the very moment that the child's senses open to the impressions of nature, nature teaches it. Its new life is but the

the Languages Unlocked. In 1649, his *Great Didactic*, completed in 1632, was published. It has been said of this work, "So sane and far-seeing are the precepts . . . that it may even yet be read with greater profit to the teacher sufficiently intelligent to avoid many minor errors than the majority of contemporary educational writings." Comenius should also be remembered as the first person to prepare a textbook in which pictures were systematically employed to make words more meaningful to the learner. This was his famous *Orbis Pictus*, published in 1658. He was the first student of education to achieve an international reputation and influence. He was well known in England; he was asked to become president of the first American college (Harvard); and he was engaged by the government of Sweden to reorganize the schools of that nation. In his native land he is still regarded as one of the great national heroes, and the tradition of mass-education that he established has been a powerful factor in giving to Czechoslovakia its present distinguished position among the countries of modern Europe.

[1] Jean Jacques Rousseau (1712–1770) advocated a "return to nature" in part as a protest against the artificialities of French civilization in the days of the later Bourbons. His greatest contribution to educational literature is the *Émile*, a book that describes in detail the way in which a boy should (and should not!) be trained. The quotation in the text is from this book. The writings of Rousseau exerted a powerful influence and are recognized as having been important factors in bringing about the French Revolution. His influence upon modern education has probably been more profound than that of any other man with the exception of Pestalozzi.

[2] Johann Heinrich Pestalozzi (1745–1827) was a Swiss who, after the devastation of his country by the wars following the French Revolution, sought its regeneration through education. As a father, he kept a careful

faculty, now come to maturity, of receiving impressions; it is the awakening of the germs now perfect which will go on using all their forces and energies to secure the development of their natural organization; it is the awakening of the animal now complete which will and shall become a man. So the sole instruction given to the human being consists merely in the act of giving a helping hand to this natural tendency toward its proper development; and this act consists essentially in the means of putting the child's impressions in connection and harmony with the precise degree of development that the child has reached. There must be then in the impressions to be given him by instruction a regular gradation; and the beginning and the progress of his various knowledges must exactly correspond with the beginning and increase in his powers as they are developed. . . . This gradation must be discovered for all the branches of human knowledge."

Froebel. — One of the most picturesque portrayals of this conception is given by Froebel[1] in his *Education of Man:*

"O man, who roameth through garden and field, through meadow and grove, why dost thou close thy mind to the silent teaching of nature? Behold even the weed, which, grown up

diary of his son's development, and out of this grew many of his educational theories. He was also influenced by the writings of Rousseau. Many of his theories are set forth in a story of what rural life might become under the right conditions; this book is entitled *Leonard and Gertrude.* Unlike Rousseau, however, Pestalozzi was far more than a theorist; he was himself a teacher of boys and girls, — and a more ardently enthusiastic teacher never lived. He organized schools successively at Neuhof, Stanz, Burgdorf, and Yverdun. The school at Burgdorf was really an asylum of waifs and orphans left stranded in the wake of the great wars that were then sweeping western Europe. Pestalozzi not only taught these children;— he dressed them, fed them, and cared for them in every way. This intimate and long-continued contact with children and with the actual problems of teaching gave to Pestalozzi's theories a force and a vitality that brought to him a host of disciples from all parts of Europe. His teachings had a large influence in the establishment of educational systems in all the countries of northern Europe. Indeed, Pestalozzi may well be revered as the father of the modern universal school.

[1] Friedrich W. A. Froebel (1782–1852) was a native of southern Germany. After serving as a soldier in the Napoleonic wars, he established, in 1816, a school at Griesheim in which during the following twenty years he worked out the implications of his educational theories. The term "kindergarten," which he first used in 1836, is a happy designation of the ideal that he had in mind for the school, — a place where human nature would unfold as naturally

amid hindrances and constraint, scarcely yields an indication of inner law, behold it in nature, in field or garden, and see how perfectly it conforms to law — what a pure inner life it shows, harmonious in all parts and features: a beautiful sun, a radiant star, it has burst from the earth! Thus, O parents, could your children, on whom you force in tender years forms and aims against their nature . . . unfold in beauty and develop in all-sided harmony."

Dewey. — By far the most prominent and influential student of educational problems to-day is John Dewey.[1] One of his most important contributions is a theory which aims to adjust the processes of education to the natural development of the child through insisting that education is not merely a preparation for life but life itself. A typical expression of his point of view is the following quotation from his *Democracy and Education:*

"Since life means growth, a living creature lives as truly and positively at one stage as at another, with the same intrinsic fullness and the same absolute claims. Hence education means the enterprise of supplying the conditions which insure growth, or adequacy of life, irrespective of age. We first look with impatience upon immaturity, regarding it as something to be got over as rapidly as possible. Then the adult formed by such educative methods looks back with impatient regret upon childhood

as a plant in the garden. Froebel's views were not well received in Germany; in Prussia, indeed, a law was passed in 1852 forbidding the establishment of kindergartens. The history of Germany might conceivably have been different had the Prussian authorities taken a different attitude toward Froebel's proposals.

[1] John Dewey (born 1859) organized in 1900 at the University of Chicago an experimental elementary school in which he demonstrated the educational theories that have since then profoundly affected school practice, not only in this country, but throughout the civilized world. Since 1904, he has been a professor of philosophy in Columbia University. He has acted as adviser to the Chinese government in the reorganization of the educational system of that republic, and his teachings have had a powerful influence in shaping the school policies projected by the Russian government. His principal educational writings are: *School and Society* (Chicago, 1899); *The Child and the Curriculum* (Chicago, 1902); *Interest and Effort in Education* (Houghton Mifflin, 1913); and *Democracy and Education* (Macmillan, 1916).

and youth as a scene of lost opportunities and wasted powers. This ironical situation will endure till it is recognized that living has its own intrinsic quality and that the business of education is with that quality."

Teaching as the direction of growth. — From the point of view that emphasizes education as growth, the work of teaching becomes primarily that of directing growth, — of providing the right kind of stimulus at the time most favorable for the exercise that will promote growth. Thus the teacher, in place of being a taskmaster who makes arbitrary requirements and then forces the learner to meet these requirements, becomes a guide and a counselor, ever on the watch for signs that the learner is ready for this or that type of educative experience. When the child evinces a desire to learn, the teacher is there to help him realize this desire in the most effective way.

Advantages of the conception of education as growth. — Although, as we have seen, the point of view that regards education as a process of growth is far from new, it has gained very widely in favor during the past few decades, and to-day represents the dominant educational theory. In many ways, it has worked a veritable transformation in the work of the schools. The kindergarten probably reflects this theory more clearly and more consistently than any other part of the school system, — and quite naturally, for Froebel, whom we have just quoted, was the "Father of the Kindergarten"; but it has also influenced powerfully the work of the primary school, and to some extent the work of the upper grades and the high school. Whatever may be its theoretical

justification, its great practical value lies in the fact that it strives to enlist from the outset the active and aggressive interest of the learner himself in the task of learning. Its fundamental postulate is the futility of all learning which does not proceed from a keenly felt need or desire on the part of the learner. It tends to break down the barrier between teacher and pupil. It makes the child rather than the teacher or the subject-matter the soul and center of the school.

Education as vicarious experience. — Many of the problems involved in teaching have their origin in the difficulty that confronts the teacher when he attempts to reconcile the notion of education as growth and its inescapable emphasis upon learning through immediate experience and at the behest of immediate impulse and desire, with the equally inescapable need for the mastery of the experience of the race. Is it possible to let learning of the latter type await the time when a natural impulse or desire for such learning puts in its appearance? Can we delay an attack on the mechanics of reading or on the multiplication-tables until a real need for these useful tools makes a vital and compelling appeal to the immature learner? If a natural interest in geography fails to evince itself, shall we let the individual remain innocent of geographical knowledge? If the child does not "take" naturally to a study of the history and government of his country, shall we permit him to grow up in entire ignorance of these subjects?

The basic significance of the social heritage. — The fact that very few persons would answer these questions in the affirmative suggests that another principle, perhaps

just as fundamental as the principle of growth, must be recognized in the work of education. Man is what he is to-day very largely in virtue of the accumulated experiences of the race. Mr. Graham Wallas states that "the most important and progressive varieties of the human race would probably, if social inheritance were in their case interrupted, die out altogether."[1] He adds:

> "If the earth were struck by one of Mr. Wells's comets, and if, in consequence, every human being now alive were to lose all the knowledge and habits which he had acquired from preceding generations (though retaining all of his own powers of invention, and memory, and habituation), nine tenths of the inhabitants of London or New York would be dead in a month, and 99 per cent of the remaining tenth would be dead in six months. They would have no language to express their thoughts, and no thoughts but a vague reverie. They could not read notices, or drive motors or horses. They would wander about, led by the inarticulate cries of a few naturally dominant individuals, drowning themselves, as thirst came on, in hundreds at the riverside landing places, looting those shops where the smell of decayed food attracted them, and perhaps in the end stumbling on the expedient of cannibalism. . . . Even in the country districts, men could not

[1] Graham Wallas: *Our Social Heritage*, p. 18, London, 1921. In commenting on the dominance in American education of the theory of education as natural growth, Mr. Wallas says: ". . . in her actual production of constructive, critical, and imaginative literature, many Americans believe, with regret, that America does not now 'pull her own weight in the boat' of world-civilization. To a foreigner it appears as if one cause of this lies in an insufficient recognition of the need of civilized man for conscious and systematic intellectual effort. In the education of young children, successive movements for the reform of American common schools have been greatly influenced by the conception of the 'natural' growth of the human mind as expounded by Froebel and other early nineteenth-century educationalists, by the coincidence of that conception with the eighteenth-century political ideas of 'nature' received from Rousseau by the Fathers of the American Revolution, and by the fact that the physical environment of the pioneer life of fifty years ago was sufficiently like that of primitive man to make it much safer than it is in modern New York or Chicago for him to trust to the more natural forms of thought. But Froebel seems to me to have helped to produce a dangerous neglect by current American theory of the socially inherited elements in civilization . . .," (*Op. cit.*, pp. 51 f.)

invent, in time to preserve their lives, methods of growing food, or taming animals, or making fire, or so clothing themselves as to endure a northern winter. . . . After a few years mankind would almost certainly disappear from the northern and temperate zones. The white races would probably disappear everywhere. A few primitive races might live on fruit and small animals in those fertile tropical regions where the human species was originally evolved, until they had slowly accumulated a new social heritage. After some thousands of generations they would probably possess something which we should recognize as a language, and perhaps some art of taming animals and cultivating land. They might or might not have created what we should call a religion, or a few of our simpler mechanical inventions and political expedients. . . ."

Nicholas Murray Butler [1] is another writer who has strongly emphasized this conception of education. After insisting that education is much more than the mere imparting of knowledge, he goes on to say:

"If education cannot be identified with mere instruction, what is it? What does the term mean? I answer, it must mean a gradual adjustment to the spiritual possessions of the race with a view to realizing one's own potentialities and to assist in carrying forward that complex of ideas, acts, and institutions which we call civilization. Those spiritual possessions may be variously classified, but they are certainly at least fivefold. The child is entitled to his scientific inheritance, to his literary inheritance, to his æsthetic inheritance, to his institutional inheritance, and to his religious inheritance. Without them all he cannot become a truly educated or a truly cultivated man."

Man is what he is to-day, then, not merely because of the *un*foldment of inherent tendencies through the pro-

[1] Dr. Butler (born 1862) is not only a student of education but a prominent man of affairs. He has been president of Columbia University since 1902. The quotation in the text is from his book, *The Meaning of Education*, p. 25. (Scribner, 1902.)

cess of "natural growth," but also, and just as significantly, through the *in*foldment of the experience of the race that is made possible in each generation by the capacity for "vicarious" experience. It is not merely that the men and women who have lived in the past have solved problems which we shall not have to solve in the same laborious way if we but acquaint ourselves with the work that they did. This is important, but there is something far more fundamental than this in man's capacity for vicarious experience. What this something is may perhaps be made clear by a simple contrast.

A few years ago the newspapers reported the case of a Kentucky mountaineer who had reached at that time the advanced age of one hundred thirty-three years. The precise truth of this report need not concern us; for the sake of the argument, let us assume that this mountaineer was born in 1787 and was still living a fairly vigorous life in 1920. His actual living experience, then, had covered the entire period during which our country under its present form of government had been in existence. Great events were transpiring throughout that period. There is no record that the mountaineer participated in these events; but even had he been most fortunately circumstanced, he could have participated in relatively few. Though he might have watched the flatboats and later the steamboats sweeping down the Ohio, he would have been far keener than most of his contemporaries had he grasped even an inkling of what that incessant stream of westward migration meant. Though he had seen the factories multiplying in the northeastern states and the railroads stretching across the western plains, neither he nor anyone else living at the time could have foretold the significance of these happenings. He was old enough in 1820 to be a member of Congress. That he was not a congressman is of no consequence to our illustration, for even had he taken part in the debate on the Missouri Compromise, he could not have appreciated at that time its bearing upon the future of the nation. He was nearly sixty

years old when the War with Mexico began. The story is that he tried to enlist in the Army at that time but was rejected because of his age. He lived through the years of the Civil War, some of the important battles of which were fought near his home. He lived through the turbulent troubles of the reconstruction period himself apparently untroubled by the perplexing questions of that period. He lived through the decades of national expansion which brought the Nineteenth Century to a close, and on into the Twentieth Century through the years of the Great War.

Let us now contrast with this aged mountaineer a boy of eighteen who in 1920 had just completed his high-school course. Let us assume that he was a boy of good "native" intelligence (as the mountaineer may well have been). Let us assume also that he had had in his twelve years of school life some very good teachers. He was born in 1902, let us say. But did he not also live in 1787? Certainly if he had had the teaching that we have assumed, he *sat* in the Constitutional Convention then assembled. He participated in its discussions. He took the measure of the members of the convention as accurately as the best judge of human nature in the group, — perhaps more accurately! He not only watched the tide of emigrants sweep down the Ohio; he learned what this tide meant, — and he saw the same movement from a half-dozen other points of vantage; from the summits of the Appalachian passes, from the Erie Canal and the Great Lakes, later from the Mississippi, the Missouri, and the transcontinental trails. The most significant events of the Industrial Revolution he lived through — and saw their meaning. He was with Fulton on the *Clermont;* he helped Whitney invent the cotton-gin, Morse the telegraph, and McCormick the reaper. The black cloud of slavery he saw gathering long before it darkened the sky. With Lincoln he lived from 1809 to 1865, and perhaps he came to know the greatest American better than any of Lincoln's contemporaries knew him. He witnessed the complicated development of modern industry, modern agriculture, and modern commerce. He fought through the Great War and sensed dimly some of the perplexing problems that it left in its trail.

All this, of course, does not tell the whole story of this eighteen-year-old lad's "vicarious" experience. We have been comparing

him only with a man who, we have assumed, has actually lived through the same period. The boy, however, has lived much longer than these one hundred thirty-three years. He has not only retraced some of the most important epochs of human life as these are recorded in what we ordinarily call history: the world of men and things that he looks out upon is to him a vastly different world from what it would be did he lack the background and perspective that his vicarious experiences — his school "studies" — have given him. He has not lived through all or even an appreciable fraction of the long and toilsome researches by which the secrets of nature have been revealed, but some of them he has lived through. He can see in the falling apple what Newton was the first to see. He sees the plant-world through the eyes of Linnaeus, the animal world through the eyes of Cuvier, Lamarck, and Agassiz, and the whole world of organic life through the eyes of Darwin, Wallace, Mendel, and De Vries. Nor have his attitude toward and his understanding of his fellowmen remained uninfluenced by what the master-minds have learned. If it is true that he has lived with the great figures of history, it is also true that he has lived with the great figures of literature, and because he knows Hamlet and Macbeth and Shylock he can see in human nature something that Shakespeare was the first clearly to reveal.

The unique advantages of vicarious experience. — Even if direct or personal experiences could be provided on a truly mammoth scale, then, they could not supplant the need for the vicarious experiences that the school with competent teachers can readily furnish. For the peculiar kind of experience which education represents, there is no substitute, because —

1. It transcends space in the sense that, through its influence, one may in effect live in far-distant lands, not infrequently gaining through vicarious experience a clearer conception of the conditions there prevailing than an untutored traveler could gain.

2. It transcends time in the sense that, through its influence, one may live in the past and gain a clearer conception of the conditions then prevailing than any person actually living at the time could have gained.

3. It reduces to terms of individual experience the vast sweeps of race-experience. The individual, so to speak, personifies the group. The group's struggles, extending over generations, become his struggles; its triumphs become his triumphs; — a fact of tremendous significance in the development of the spirit of kinship or brotherhood, expressed in the past not always happily in a narrow type of nationalism, but having within it, as Mr. Wells has so clearly pointed out,[1] the possibilities of a common bond uniting all peoples.

4. It enables the insights, inferences, and interpretations of the keenest and cleverest minds to become the insights, inferences, and interpretations of all normal minds. Thus genius, rare and exotic though it be from the point of view of its actual appearance among human kind, may become through its fruits in a very practical way an almost universal possession.

5. It is clearly both the condition and the agent of progress, permitting the accumulation and consolidation of gains from individual to individual, from group to group, and from generation to generation, and insuring as well the perpetuation of the ideal of progress and of its method.

Teaching as the adaptation of the experience of the race to the capacities of the individual. — The right of the individual to grow or unfold or develop according to

[1] See below, p. 85.

the natural tendencies for growth that are within him seems, then, to be at times paralleled and at other times crossed by a right that is apparently of equal importance, — namely, the "right of the individual to share in the spiritual life of the race."[1] Perhaps the most helpful way in which to regard the task of education is to take due account of both rights and to look upon teaching as the *art of adapting the experience of the race to the capacities of the individual.* Capacities are sometimes indicated by spontaneous impulses and desires, but this is not always true. There will be occasions when a satisfactory adjustment of the two rights will be extremely difficult, — but the criterion that should be applied in cases of doubt seems tolerably clear. The lessons to be derived from the experience of the race have an unquestioned social value that far transcends any value that will in all likelihood be derived from individual experiences. As Professor Dewey has said:

> "It is of grace not of ourselves that we lead civilized lives. There is sound sense in the old pagan notion that gratitude is the root of all virtue. Loyalty to whatever in the established environment makes a life of excellence possible is the beginning of all progress. The best we can accomplish for posterity is to transmit unimpaired and with some increment of meaning the environment that makes it possible to maintain the habits of decent and refined life." [2]

Questions, Exercises, and Problems

1. Observe young children learning to jump the rope, turn somersaults, drink from a fountain, use a pen, or any other similar motor accomplishment, and write an account of what takes place.

[1] Quoted from Professor B. H. Bode, who adds, "This is *the* important item in any properly constructed program of education."

[2] John Dewey: *Human Nature and Conduct*, p. 21. Holt, 1922.

2. Observe older students, possibly your mates, in the acquisition of any motor accomplishment, and describe what takes place in establishing connections and in the formation of ideas. New "stunts" are excellent material for such examples of learning.

3. What are the differences between "amateur" and "professional" in baseball, football, tennis, golf, billiards? Between a player and a good player? Between a good player and an expert? What is meant by a "heady" player?

4. Why is a teacher of baseball and football usually called a "coach"? What is the difference, if any, between teaching and coaching?

5. Make a list of some of the lessons that you have learned *exclusively* from your own experience.

6. Examine a lead pencil. What are its parts? What need had its inventor felt? What was his "idea"? Examine an "Eversharp" pencil. How does it differ from a lead pencil? What was its inventor's "idea"? Explain the invention of the thermometer, the barometer, the telegraph, the telephone, the self-binding harvesting machine, the potato digger, the post-hole digger, etc., etc., until you "catch on" to the inventions that are all about you.

7. Twin boys are born so alike physically and in their first reactions that they can scarcely be told apart. When ten days old, one is given over to the care and custody of a Navajo Indian family living in Arizona. The other is placed with an Italian coal miner's family in a small "company" mining town in western Pennsylvania. Trace the differences in *unfoldment.* What marked differences of interest would probably have developed by the age of five? of ten? of fifteen? of twenty? Compare each with yourself and explain the likenesses and differences. What is meant by the social heritage? In what ways, if any, does it influence *unfoldment?* What does *infoldment* mean? What is the effect of *infoldment* upon subsequent unfoldment? Under what conditions could *unfoldment,* in the sense of development wholly from within, actually occur?

8. A normal school president used, in 1890, to exhort his students as follows: "Young people, press yourselves against the molding influence of your environment!" What did he mean?

9. Truthfulness, honesty, sincerity, courtesy, etc., are necessary

to "a decent and refined life." To what extent, in your own life, have these things *unfolded* and to what extent have you *infolded* them?

10. To what extent does the statement regarding "the futility of all learning which does not proceed from a keenly felt need or desire on the part of the learner" apply to your "learning" in this class? Should it so apply? If it does not, whose fault is it?

11. Make a list of the technical terms used in this chapter. Try to frame a provisional definition for each, and to find for each a clear-cut concrete illustration.

Suggested References

Students who are not familiar with the simpler facts regarding the anatomy and physiology of the nervous system will do well to study the sections covering these topics in one or more of the following books:

D. W. LaRue — *The Child's Mind and the Common Branches*, chs. i, ii. Macmillan, 1924.

L. A. Averill — *Psychology for Normal Schools*, pp. 16–22. Houghton Mifflin, 1921.

S. S. Colvin and W. C. Bagley — *Human Behavior*, ch. vii. Macmillan, 1913.

For concrete and readable statements of the nature of learning from the point of view of contemporary psychology, see:

A. R. Mead — *Learning and Teaching*, chs. i, ii, iii. Lippincott, 1923.

W. H. Pyle — *The Psychology of Learning*, ch. i. Warwick and York, 1921.

D. W. LaRue — *The Child's Mind and the Common Branches*, ch. vi.

E. L. Thorndike — *Education*, ch. vi.

F. N. Freeman — *How Children Learn*, ch. i. Houghton Mifflin, 1917.

On the conception of education as growth, see:

J. and E. Dewey — *Schools of Tomorrow*, chs. i, xi. Dutton, 1915.

E. O. Sisson — *Essentials of Character*, ch. i. Macmillan, 1911.

On the conception of education as vicarious experience, see:

N. M. Butler — *The Meaning of Education*, ch. i. Scribner, 1915.

G. Wallas — *Our Social Heritage*, chs. i and ii. Yale University Press, 1921.

Chapter III

THE MATERIALS OF EDUCATION: *A.* THE BASIC SOCIAL ARTS

School subjects crystallize race experience. — Generally speaking, the materials of education comprise the conquests of mankind in its struggle upward. In a very real sense, they are the substantial and enduring deposits of human experience, and their place and importance in education are determined very largely by the measure in which they enable each generation to stand upon the shoulders of those that have gone before.

In the school these materials, — these products of the experience of the race, — are organized as "subjects of instruction" or school "studies." Crystallized as they thus are, and given specific names, such as "reading," "language," "spelling," "arithmetic," "geography," "history," and "science," they not infrequently tend to become formal and detached. That they had their origin in concrete, living human experience and that they had and still have a large part of their value in the aid that they give man in solving the problems of his life and in controlling the forces that play upon him, are facts that both teacher and learner are likely to overlook. It is most important, then, that the teacher especially should not only *know* the materials with which he is dealing, but also *appreciate* their significance through an understanding of how they came into existence and

in what important ways they serve to make life infinitely richer and more fruitful than it would be without them.

The Arts of Communication

Of prime significance among these materials are the arts of communication, and especially the language arts, — oral speech, reading, and writing, — which lie at the very basis of social life.

The evolution of articulate speech. — We who have been born into a world of articulate speech must needs make a strenuous effort of the imagination even dimly to appreciate what the development of language has meant to humanity. No one knows how many thousands of generations ago our ancestors first acquired the power of so controlling the muscles of the lips, tongue, and larynx as to make at will distinct vocal sounds, but it is agreed by all competent students of the subject that this period was far back of the time when recorded history began, — so far back, indeed, that the time elapsing from the first development of the power of speech to the invention of writing (which made recorded history possible) was vastly longer than the time which has elapsed from the invention of writing to the present day.

Gesture, pantomime, and drawing helped in the development of speech. — The mere power of controlling the voice-muscles was, of course, only the beginning. The development of separate words each representing a distinct idea or meaning was a very slow and laborious process. We may imagine a primitive man returning from the pursuit and capture of some animal desired by him for food, and wishing to let his companions know

about his adventure. He could reproduce by gesture and pantomime some of the important experiences that he had undergone, taking now his own part, now the part of the animal that he was pursuing. We may imagine him going through the motions of running, swimming a stream, climbing a tree, catching the animal, beating it with a club; and then, quickly shifting the pantomime, representing the animal as panting for breath, struggling with its pursuer, finally sinking exhausted to receive the death-blow. Meantime the actor would add realism to his acting by repeating his own cries of fear or exultation, and by imitating the instinctive cries of his wounded prey. We may imagine, too, that he made some use of graphic representation, — indicating relative positions by sticks and stones or by crude drawings in the sand or on the walls of his cave.

Slowly and tortuously out of experiences such as these, objects and actions came to be attached to vocal sounds and to visual representations. Words and pictures came to have more or less definite meanings. Gesture and pantomime accompanied by more or less inarticulate cries undoubtedly came first; crude drawing and other visual methods of symbolizing experience next; and then the beginnings of articulate speech. But even with the first articulate speech, gesture and drawing probably served to make the meanings clearer.

"If Paleolithic man had a word for 'horse' or 'bear,' he probably showed by tone or gesture whether he meant 'bear is coming,' 'bear is going,' 'bear is to be hunted,' 'dead bear,' 'bear has been there,' 'bear did this,' and so on. Only slowly did the human mind develop methods of indicating action and relationship in a formal manner. Modern languages contain many thousands of

words, but the earlier languages could have consisted of only a few hundred. . . . The growth of speech was at first a very slow process indeed, and grammatical forms and the expression of abstract ideas may have come very late in human history, perhaps only 400 or 500 generations ago."[1]

The condition of primitive man before the development of language. — It is important to know that, in the judgment of competent students, some of these primitive men who were so narrowly limited in their ability to communicate with their fellows were physically equal to the most advanced peoples of the present day. Not only were their bones and muscles as well developed, but in the structure of the brain and other parts of the nervous system they seem to have been in no essential way inferior to modern man. They had the same powers and capacities, but they lacked something that is very important, — something that distinguishes modern man from his primitive forebears perhaps just as sharply as primitive man was distinguished from the more highly developed of the lower animals. What primitive man lacked that modern man possesses is the capitalized experience of the race, — the arts, skills, ideas, ideals, and standards toward the accumulation and refinement of which the generations of primitive peoples who worked out so laboriously an articulate language made the first start. It is well to remember our indebtedness to them, — an indebtedness which has been expressed by William James in the following eloquent passage:

"Bone of our bone, and flesh of our flesh, are these half-brutish prehistoric brothers. Girdled about with the immense darkness of this mysterious universe even as we are, they were born and

[1] H. G. Wells: *The Outline of History*, vol. i, pp. 150 f. Macmillan, 1920.

died, suffered and struggled. Given over to fearful crime and passion, plunged in the blackest ignorance, preyed upon by hideous and grotesque delusions, yet steadfastly serving the profoundest of ideals in their fixed faith that existence in any form is better than non-existence, they ever rescued triumphantly from the jaws of ever imminent destruction the torch of life which, thanks to them, now lights the world for us." [1]

Language as the prime condition of social living. — The development of articulate oral speech was important, not only because it afforded a means of passing on the lessons of experience from individual to individual, but also because, in doing this, it brought men closer together, enabling them to work in coöperation and to share their experiences. With such coöperation came a common understanding, common sympathies, common standards, and common aspirations, — the basis, in short, of a truly social life. When the modern school teaches the child to use oral speech effectively, when it increases his vocabulary of meaningful words, and multiplies and refines the associations of these words with concrete experience, it is doing a vast deal both to fit the individual for life in a highly organized social group and to make possible the conditions of betterment and progress within that group.

The invention of writing. — Written or printed language greatly expands the influence of oral speech. It was suggested in an earlier paragraph that drawing and articulate speech probably developed together in the earlier stages of social evolution. The word and the picture are, in many ways, the twin symbols of man's

[1] William James, quoted by J. Arthur Thomson in *The Outline of Science*, vol. i, p. 175. Putnam, 1922.

progress upward. It took thousands of generations of experience with spoken words and pictures, however, before the art of *picturing words* was invented. The earliest "writings" were not pictures of words, but pictures of things, which, when standardized or conventionalized, became "pictographs" or symbols of ideas. The development of pictographic writing was of very great importance, but of much broader significance was the invention of phonetic writing, or the use of symbols to represent spoken words. Taken together, these two inventions are considered by some to have constituted the greatest event in human history.

Written language made possible the development of accurate knowledge. — Whether or not we agree with this characterization, we cannot fail to recognize in the invention and refinement of the art of writing a most significant forward step. And the reason is clear. The oral word has no permanence except as it is treasured in memory, — and memory, as everyone knows, is always uncertain and sometimes treacherous. Thus while experiences may be accumulated and transmitted from generation to generation by word of mouth, — and were so transmitted for thousands of years, — they are likely to become heavily overlaid with all sorts of errors. As one generation after another repeats them, additions and subtractions are inevitable until the original story, which may have been thoroughly authentic and reliable, has become merely a tradition of which one part in ten may perhaps be true, while the remaining nine parts are the accumulated products, not of actual experience, but of the imagination, the fancy, and the speculation of those

through whose minds the tradition has passed. Indeed, if experiences can be transmitted only in this way, the line of least resistance is to reduce them to songs, chants, and rhymes, so that melody and rhythm may help the memory; and this process itself, while it has given the world some of its greatest masterpieces of imaginative literature, is quite likely to distort beyond all recognition the original truth from which the tradition may well have had its start.

Written language widened the scope of social coöperation. — It was writing, then, that really made possible the accumulation and refinement of accurate knowledge. But in doing this, it also did something else of perhaps equal importance. Oral speech, as we have seen, brought men together in coöperating groups through the capacity that it gave to each individual to share in the experiences of his immediate fellows, to profit by the lessons that they had learned, and to strive with them toward the realization of common purposes. But written language infinitely extended the scope of such coöperation and common striving. It removed from mankind the shackles of the local and immediate. Those living in places far distant from one another had now a means of working together and thinking together; and, in a very real sense too, those who had lived in the past could be reincarnated in each generation. They could not themselves, of course, be reborn in the flesh; but their thoughts and dreams and ideals could be made to live anew in each oncoming group.

Written language made possible law, property, and a "continuing tradition." — With the development of

writing, social evolution or civilization received a pronounced impetus. Stable governments were now possible, for laws could be crystallized in permanent form and administered with something akin to justice; trade and commerce could pass the stage of barter; and, above all, the institution of property became possible through the recording and preservation of titles. With these advantages came also the possibility of a "continuing tradition" that served to bind people together in larger and larger social groups and over relatively long periods of time. In so far as can be learned to-day, some form of written language was an indispensable basis for all of the ancient civilizations. Accumulated culture had long preceded these civilizations; arts of various sorts had been slowly evolved and measurably perfected; but the relative stability and continuance that were essential to such civilizations as those of Egypt, Assyria, Crete, China, and India needed above all other arts the art of writing.

Limitations of writing. — And yet the art of writing, epoch-making as it was, suffered under a severe handicap. Whether as a means of expressing one's own thoughts through written symbols or as a means of interpreting through these symbols the thoughts of others, the art was difficult to acquire, and only those who had sufficient native wit combined with leisure and diligence could make use of it. The difficulties were much more numerous and appalling in connection with pictographic writing than later when the phonetic alphabets had been developed. As a consequence, it was well within the range of possibility that a whole generation might elapse during

which no one learned to read or write, and then the written records became meaningless and the civilization which they made possible quickly disintegrated. This has actually happened more than once since the beginning of recorded history, and it may be a partial explanation of the death and burial of civilizations which for thousands of years were unknown to the generations that followed, and some of which have only recently been uncovered through the efforts of scholars who have puzzled out the meaning of the ancient records.

Because it facilitated the mastery of reading and writing, the development of the phonetic alphabet greatly lessened the chance that a link would be missed in the chain of transmission. Even with a phonetic alphabet, however, the service which this form of communicating experience may render humanity has its limitations. As long as records had laboriously to be transcribed by hand, the multiplication of records on a wide scale was impossible, and even though the mastery of the reading and writing arts was less laborious than under the pictographic system, it was still far from easy, and this fact together with the limitation of manuscripts would still mean the restriction of these arts to a relatively small group of people.

Universal education made both possible and necessary by printing. — We can readily see, then, why the invention of printing was an event of the first magnitude in human history, — why it is, indeed, that what we call "modern" history actually dates from the development of the printing-press in Europe. The impetus that writing had given to ancient civilization was now widened

in scope and intensified in influence, — multiplied, indeed, a thousand-fold, perhaps a million-fold. What had been the privilege and prerogative of a very few individuals was now open to the masses of people. Not at once, of course, for learning to read and write was not then nor is it now an easy task, and to provide schools and teachers costs money. There has been until recently, too, on the part of the governing powers in some countries, a deliberate effort to keep the masses of the people from learning to read and write. But gradually through four centuries of struggle, mass-education in the Western world has become an established institution.

Language the basic factor in social evolution. — This is a far cry from primitive man struggling through gestures and inarticulate cries to let his fellows know the joys and the sorrows that were in him. It is a far cry from the ancient civilizations where the great masses of the people lived in the densest ignorance and the most abject slavery, and where splendor and glory were for the very few, and the privileges of knowing the past and its secrets were for still fewer. But it is all part and parcel of the same great movement in social evolution, — a movement that has nowhere been more vividly depicted than in the words of Mr. Wells:

> ". . . From the first writings onward, a new sort of tradition, an enduring and immortal tradition, began in the minds of men. Life, through mankind, grew thereafter more and more distinctly conscious of itself and its world. It is a thin streak of intellectual growth we trace in history, at first in a world of tumultuous ignorance and forgetfulness; it is like a mere line of light coming through the chinks of an opening door into a darkened room; but slowly it widens, it grows. At last came a time in the history

of Europe when the door, at the push of the printer, began to open more rapidly. Knowledge flared up, and as it flared it ceased to be the privilege of a favored minority. For us now that door swings wider, and the light behind grows brighter. Misty it still is, glowing through clouds of dust and reek.

"The door is not half open; the light is but a light new lit. Our world to-day is only in the beginning of knowledge."[1]

The teaching of the language arts. — The teacher whose business it is to teach children to read and write may be thought of by some people as spending his or her time in a humdrum, formal, and quite uninspiring task; but it is doubtful whether any other work in the whole range of human occupations is at basis more significant than this. It is well, too, for the teacher to know that it is significant and why it is significant. The work of this, that, or the other primary teacher might be dropped to-morrow never to be resumed, — and the world would go on in about the same way. But if half or even a quarter of the primary teachers of our country were to quit their work, and if no substitutes could be found, it would be another story — and a most calamitous story.

This does not mean, however, that merely insuring a mastery of reading and writing is all that the school can or should do. It is a very important beginning, but after all only a beginning. Even the low per cent of adult illiteracy in many of our American states is not proof that the schools of those states are doing their work as well as they should. During the Great War, the American Army used a much better standard of literacy than is applied when the census is taken. An effort was made to find out not only whether the soldiers could read and

[1] H. G. Wells: *The Outline of History*, vol. i, p. 231.

write, but whether they could read a newspaper intelligently or write an intelligible letter. Measured by this standard, nearly one fourth of the enlisted men were found to be deficient, and their deficiencies were no doubt due in large part to inadequate school training.

The beginnings of reading and writing, then, while of primary importance, must be supplemented by more advanced instruction and training in the language arts, and by instruction in other arts. Such studies as spelling, composition, and grammar represent the effort made by the schools to increase the pupil's mastery of language, both oral and written, and to give that accuracy and freedom which are necessary to the adequate use of language as a means of social communication.

The Arts of Computation and Measurement

The social significance of computation and measurement. — A second group of arts are almost as important in education as are the arts of communication. They have this high rank because, like language, they are fundamental to social living. These are the arts of computation and measurement, which are represented in the program of the elementary school by the subject of arithmetic, and in the high-school and college programs by algebra, geometry, trigonometry, and other branches of "mathematics." In a highly organized human society, computation and measurement are essential because occupations are specialized, each person doing something for others and in turn depending upon others for many, indeed most, of the goods and services that he himself needs. A system of exchanging products and services

necessarily develops under these conditions, and with the continuing growth of the population and the increasing interdependence of its component units, the system of exchange becomes more and more intricate. Foodstuffs are exchanged in terms of pounds, tons, quarts, bushels, dozens, gross, hundreds, and what not. Clothing materials are exchanged in terms of pieces, bolts, dozens, and yards. The value of engines and dynamos is determined in part by the horse-power that they generate. Land is bought and sold in the country by the acre and in the city by the front-foot. The products or services of one individual must be measured against some definite standard of value if anything like an equitable distribution of the burden of maintaining society is to be attained. Thus arise the various monetary systems which furnish "common denominators" of value. The various individuals making up the social group must either learn to compute values in terms of these common denominators or suffer under a severe handicap in their dealings with others.

Measurement the basis of accurate knowledge. — The brief statements just made give only a suggestion of the importance of measurement and computation in modern life. These arts are not only essential in the coöperative living that modern civilization has brought about; they are in themselves instruments of the first significance in the gaining of new knowledge. Science itself is based upon measurement, and as each science develops, it tends to become more and more mathematical — which is only another way of saying that it increases the accuracy with which it measures. The bal-

ance and the graduated test-tube are indispensable to the chemist. Practically every piece of apparatus in the physics laboratory is an instrument for measuring, for comparing measures, or for computing measures. Modern biology is developing its units of measurement and is dealing with certain phases of its investigations, — for example, the study of heredity, — on a distinctly mathematical basis. Modern psychology had its origin in an attempt to measure differences in the "intensity" of sensations, and its recent development has made increasing use of measuring devices. Even the processes and products of education are being measured, and much of the progress that education has achieved during the past two decades may be traced to the success with which units and instruments of measurement have been devised and refined.

The slow evolution of even the simplest phases of these arts. — It is small wonder, then, that the arts of measurement and computation are so important in the work that the school tries to do. Only the simpler and more universally used measures, of course, can find a place among the materials of elementary education, but this does not mean that the topics of arithmetic that are taught in the lower grades are unimportant, or that they are "simple" except by contrast with the more advanced phases of mathematical science. It took the race a long time to learn how to count beyond four or five; and it was a long time after the process of counting was learned before the system of decimal (Hindu) notation was developed. Even Roman civilization had to content itself with a much more cumbrous and ineffective method

of representing numbers, and one who is skeptical of the advance which the invention of the decimal system made possible may gain a pronounced respect for this device which we now look upon as a commonplace by attempting to multiply, say, MDCLXVII by CLXI without translating the Roman into Hindu numerals.

Even the invention of the Hindu notation did not mean at once the relatively facile processes that we now employ. The digits from 1 to 9 had been used for generations before the symbol for zero (0) was added. And some of the now familiar processes came so late that they may almost be looked upon as modern inventions. Clever mathematicians, for example, struggled for centuries with cumbrous cancellation methods in working the problems that we now solve by "long division." Decimal fractions were an even later development, — a development that, simple as it may seem to us now, really marked a forward step of large significance.

It is well to remember, then, that the teacher who teaches children how to count, add, subtract, multiply, divide, work with fractions, compute interest, use tables of denominate numbers, and understand something of mensuration, ratio, proportion, and the metric system is not only helping them to a mastery of some very useful arts, but is also retracing with them some of the important steps that the race has taken in its long struggle upward from the brute and the savage.

Formal education for a long time limited to training in the basic social arts. — The arts of communication, computation, and measurement have been so important

in the development of civilized society that it is small wonder that the work of the school should have been for a long time limited almost exclusively to training in these arts. This does not mean that *education* in the larger sense began with these materials. Far from it. Probably long before articulate speech was well developed, and certainly long before the invention of writing, children were trained by their parents in the arts that were necessary in securing food and shelter. It is likely, too, that the primitive social group — the tribe — undertook to instruct the young in the tribal customs and ideals. If we infer regarding conditions existing in the remote past from the way in which savage peoples live to-day we may well conclude that mankind very early developed impressive ceremonies for initiating young people into the privileges and responsibilities of adulthood. This, with the training in the "practical" arts of hunting, fishing, building rude shelters, making clothing from the skins of animals, as well as in the arts of primitive warfare, constituted a certain very important type of education. It was for the most part, however, an incidental or informal type of education; almost instinctive, in fact, — that is, carried on with but slight conscious purpose or recognition of its meaning. "Formal" or organized and purposeful education came much later, and may be thought of as owing, if not its very existence, at least its growth and stability, to the social development made possible by the arts of language, computation, and measurement. Hence these arts, among all of the achievements of humankind, have had and still have the place of first importance in the school.

Questions, Exercises, and Problems

1. Find the oldest school textbooks you can on such subjects as reading, grammar, and arithmetic, and compare with modern textbooks in the same subjects. (Every institution that prepares teachers should have a collection of such old textbooks, and each generation of students should add to the collection.)

2. At about what age do normal children begin to babble? to use words? to make sentences? If a child did not hear any language at all, at what age would he begin to talk? What if he were congenitally deaf? How, then, does social environment influence the development of a child's language? What new "slang" have you learned since last June? Explain the process by which you learned it.

3. Suppose you were shipwrecked on an island inhabited by civilized people who spoke a language unknown to you. How could you communicate with them? How would a mastery by you of a hundred of their words help you? Name ten of the English equivalents that you would place in the first one hundred words to be learned. Answer the same questions on the supposition that the inhabitants of the island were uncivilized but had an oral language with one thousand words. How would you proceed to teach these uncivilized people a written language? What civilizing effect would a written language have on these uncivilized people?

4. Who invented the art of printing by movable type? How does a linotype machine operate? How is printing paper made? If printing should become a "lost art," what would be the effect on modern business? on government?

5. Who taught you to read? By what method were you taught? In what ways is the ability to read serviceable to you? Do you know a person who is illiterate? How many illiterates are there in the United States? In your State? In your county? In your town? Find in the latest United States Census the illiterates by age-groups. Put in parallel columns the facts for the preceding census period and explain the differences.

6. Consult any standard dictionary for the following terms: *measure, foot, yard, rod, mile, pound, ton, ounce, bushel, peck, gallon,*

quart, pint, gill, dram. What is the *metric system?* What are its advantages? Why is it not universally adopted?

7. What are the "Three R's"? Were they ever adequate to the social needs of people? If so, what things have since made them inadequate?

8. What has brought about what we call *progress?* What sustains, supports, or continues *progress?* What will cause *progression?* (Consult a dictionary for the meaning of *progress* and *progression.*)

9. What relation has the work of the public school to *progress* and *progression?*

Suggested References

F. R. Clow — *Educational Sociology*, ch. i. Macmillan, 1921.

J. A. H. Keith — *Elementary Education*, ch. ii. Scott, Foresman, 1905.

For a brief but stimulating account of the development of speech and writing and the influence of these arts on human evolution, see:

H. G. Wells — *The Outline of History*, vol. i, chs. xiv and xviii. Macmillan, 1920.

An interesting and non-technical description of life in the later prehistoric times (with some reference to earlier conditions) will be found in:

J. M. Tyler — *The New Stone Age in Northern Europe.* Scribners, 1921.

On the development of computation, see a book written especially for children but full of interest to grown-ups.

D. E. Smith — *Number Stories of Long Ago.* Macmillan, 1919.

On the origins of number words and systems, see:

L. L. Conant — *The Number Concept*, especially chs. i, ii, iii, v. Macmillan, 1896.

A book written for the junior high school, but interesting and informing to all who wish to gain a bird's eye view of social evolution is:

L. C. Marshall — *The Story of Human Progress.* Macmillan, 1923.

Chapter IV

THE MATERIALS OF EDUCATION: *B.* THE LIBERAL STUDIES

"Form" subjects and "content" subjects. — The materials discussed in the preceding chapter are sometimes called the "form" subjects because they deal primarily with the framework of language and number. Sometimes, too, they are referred to as "tool" subjects because they are indispensable instruments for gaining knowledge. Perhaps they might be more fittingly termed the "key" subjects, for their mastery unlocks the door to the accumulated wisdom of the ages. Any of these designations, however, would be unfortunate if it tempted one to forget the fact that these "form" or "tool" or "key" subjects are in themselves a most important part of this accumulated wisdom. The teacher especially should appreciate their significance as well as understand their structure and acquire skill in their application.

The "form" subjects are sometimes contrasted with such studies as geography, history, civics, literature, and the natural sciences, which are often referred to as "content" subjects. The contrast may again be helpful if one does not forget that anything that is "learned" may become an instrument in promoting further learning.

The content studies are essentially "liberalizing" in their effect. — Much more important is the conception of the "content" subjects as a means by which the

widening of experience and the *deepening* of experience become possible once the "tools of knowledge" are at the command of the learner. They are the principal agencies or vehicles of that vicarious experience the importance of which was emphasized in Chapter II. It is chiefly through these studies that the "time horizon" and the "space horizon" may be immeasurably widened. It is chiefly through these studies that the individual may re-live the great epochal experiences of the race. It is chiefly these studies that must be depended upon to provide that basic "common culture" which makes collective thinking and collective action possible among vast numbers of people and thus lays the basis of an effective democracy. Because they enable men to transcend the limits of individual experience, — to break through the barriers of the local and the immediate, — these studies are essentially "liberalizing," or (better) *liberating*, in their influence. Hence we shall refer to them in this book as the "liberal" studies.

All subjects may be studied from the liberal point of view. — It should be said most emphatically, however, that no group of school subjects has a monopoly of this liberalizing or liberating influence. The basic social arts that we discussed in Chapter III, and the "practical arts" that will be the theme of Chapter V, can be made thoroughly liberal in their organization, their spirit, and their effect. There are, however, some subjects the primary justification of which must be sought and found almost exclusively in the liberalizing effect of their mastery, and among these the so-called "con-

tent" subjects of the elementary and high-school programs have a most important place. In the present chapter a few of the basic types of these essentially liberal studies will be discussed with particular reference to their fundamental meaning as materials of universal education.

Geography as a Liberal Study

Geography and national history were the first of the "content" subjects to be recognized in modern elementary education — and for a fundamental reason. Geography in a very real sense widens the space-horizon; history in an analogous fashion widens the time-horizon. The one carries the learner beyond the narrow confines of his own locality; the other carries him beyond the confines of the immediate present.

The human significance of geography. — Under the proper conditions, the study of geography may become not only an informing description of the earth as the home of mankind; not only a fascinating account of how millions of people, whom we have never seen, live and work; but also an inspiring revelation of some very important phases of human progress. In other words, geography is not only a collection of facts; it is itself a record of experience, — of struggles and disappointments and achievements. Again it is important that the teacher not only know the facts but also appreciate in some measure what these facts have cost and what they have meant in human life.

The "common" vs. *the "commonplace."* — It is a commonplace to-day, for example, that the earth is "round

like a ball." For generations children have learned this phrase. They have seen and twirled the school globe and have been told that this globe represents the form of the earth on which they live. The illusion of a flat world has little chance of lodgment in their minds. From the very outset they are enabled to avoid one of the gross errors to which for thousands of generations even the keenest and cleverest minds of the race were subject.

But just because the fact of the earth's rotundity is a matter of common knowledge to-day, its true significance is likely to be missed. It becomes one of those things that are "taken for granted." Obviously, although the fact is a matter of common knowledge, it is very far from a commonplace fact;[1] its establishment as a fact was very far from a commonplace achievement; and the influence of its establishment upon human life and human destiny was very far from a commonplace influence. To teach children the fact that the earth is round may seem to the public and even to the teacher a simple and perfunctory and not very important task. But to lead each generation to an appreciation of what this part of its heritage has cost, what it has meant, and what it still means is not simple nor unimportant, nor can it be done successfully through lifeless and perfunctory teaching.

What the map-symbolism has cost. — As the pupil progresses in the study of geography, he soon gains an

[1] For this distinction between the "common" and the commonplace" the writers are indebted to President Livingston C. Lord, of the Eastern Illinois State Teachers College. Dr. Lord (born 1851), himself a remarkable teacher, is widely known as an unusually keen judge of teaching. Many men now prominent in educational leadership were selected by him in their earlier years and given an opportunity to develop.

initial acquaintance with a new set of symbols that have been almost as important in human progress as have words and numerals. These are the map-symbols, and to be able to read a rich meaning into the lines, dots, shades, and colors of modern maps is a most important objective in teaching and learning geography. And what efforts the construction of these maps has cost! There are the efforts of map-makers and printers and lithographers which have been so important in giving us clear and accurate maps. There are the penetrating studies of the long list of mathematicians who have taught mankind how to reckon longitude and determine latitude, how to survey or measure vast distances with minute accuracy, and how to represent curved surfaces on flat "projections." Good maps would be impossible without these devices and instruments and large credit must be given to those who, generation after generation, have made these advances possible. Then, too, we have the scientists who have discovered and formulated the laws that govern climate, prevailing winds, and ocean currents, all of which are important items of our present knowledge of geography and each of which has its part to play in the map-symbolism. Finally, back of the work of the map-makers, the mathematicians, and the scientists lie the pioneer efforts of the discoverers and explorers who penetrated into the unknown and brought back the "raw materials" so to speak, — the immediate experiences, — out of which geographical knowledge has been refined.

The study of geography as a series of adventures. — To "study" geography should certainly mean for each

pupil in school some glimmer, at least, of these deeper human meanings. Most people would consider themselves very fortunate indeed if they could take a voyage to the South Seas, or journey through Central Africa, or paddle down the Mackenzie through the glories of the Canadian summer. Only one in a million, perhaps, may actually have one or another of these opportunities. But practically everyone who has learned to read may take vicariously not only these but a thousand other adventurous journeys, and in so doing may have a very decided advantage over an unlettered traveler who through accident or good fortune happened to take a few of them in the flesh. The South Seas may be explored in the company of no less a personage than Captain Cook; Livingstone and Stanley stand ready to act as guides along the great rivers, and through the jungles, and over the plateaus of equatorial Africa; and one might actually paddle down the Mackenzie and gain far less from the experience than one could secure in a fraction of the time by following Mackenzie himself on the first voyage that a white man ever made down that interesting stream.

The civic value of knowing other lands and other peoples. — To say that geography may "widen one's space-horizon," then, is more than a mere phrase. Something of the breadth of outlook that the actual experiences give to a favored few (and only to a favored few) of those who travel may be gained through vicarious travel if the teacher's guidance be adequate. And beyond the broadened outlook that comes from an intelligent acquaintance with other lands and other peoples there may well be the priceless privilege of knowing

intimately the great travelers of all the ages from Strabo and Hanno and Marco Polo to Nansen and Scott, Sven Hedin, Amundsen, and Peary.

It is clear too that, with the development of modern civilization, an appreciative knowledge of other countries and other peoples has become increasingly important, not only to scholars and statesmen, but to all who have a vote and a voice in determining national policies, — and under the conditions of modern democracy this means practically everyone. "Breadth of outlook" and a "widened space-horizon" become, then, very much more than merely individual advantages. They are essential attributes of the kind of thinking that every intelligent citizen must do if he is to play well his part in the business of self-government.

Geography reveals the adjustment of natural resources to human needs. — The proper teaching and the proper study of geography will reveal the outstanding conquests that man has made over the material objects and forces that surround him, — his conquest of his material environment. To learn in a concrete and vivid fashion whence come the commodities of everyday use, — our food, our clothing, our tools and machinery, the materials from which our buildings are constructed, — and at what cost of human effort these commodities are grown, mined, manufactured, transported, exchanged, and finally placed in our possession, — is an important step toward understanding the complexity of modern society and toward appreciating the service that social organization renders to the individual, and the debt that every individual owes to those who coöperate in providing for his needs.

A keen sense of this interdependence, if widely spread among all of the people through the agencies of universal education, will do much to eliminate the danger of radical social upheavals, both by impressing the toiler with the basic importance and the essential dignity of his work, and by stigmatizing as social parasites those who live in idle luxury. It is by no means an accident that the peoples that have been least subject to political and social revolutions in the critical years following the Great War are those among whom elementary education had been made most nearly universal in the generations preceding.

Geography impresses the need of conserving natural resources. — The proper study of geography will also do much to insure a keen appreciation of the priceless value of natural resources; a salutary resentment against those who devastate the forests, impoverish the soil, or draw wastefully or extravagantly upon the limited stores of coal and petroleum; and above all a social conscience that will impel each generation to keep in mind the needs of those that are to follow. Again it is the *education of all* that is needed here. The conservation of natural resources must become a national standard, — ultimately, through coöperation among the teachers of all civilized nations, a world standard.

Geography an elementary sociology. — Geography has been a recognized part of the elementary-school program of studies for approximately a century. During that time its materials have been not only refined and adapted to the capacities of children, but also pointed more and more consciously and with increasing effec-

tiveness toward the social outcomes some of which have been discussed in the preceding paragraphs. The older meaning of geography (literally, a description of the earth) had been both expanded and limited, — expanded to include many materials from such sciences as astronomy, meteorology, anthropology, and economics in addition to the basic earth-science, geology; and limited in the sense that human life and its needs have become the center of organization for all of these materials. The study of geography to-day is in reality an elementary (or better, an elemental) study of sociology.

History as a Liberal Study

The broadened scope of history as a school subject. — The reader will have noted that, from one point of view, all of the school subjects so far considered may be thought of as phases of the subject that we call history. That is, they are records of human experience. We do not usually think of them as historical in their character because we have come to associate the word "history" almost exclusively with the story of the growth of nations and the development of political institutions. Of late there has been a decided tendency to broaden the scope of the historical studies that are included in the school program. Relatively less emphasis is given to changes in government and to the warfare which such changes have so often involved, while a far stronger emphasis is given to the development of commerce, industry, agriculture, education, literature, and art. There are some students of the problem, too, who would teach history almost exclusively in connection with problems that

arise in the study of other subjects, abandoning the systematic study of history as such.

It is questionable, however, whether the systematic study of history can be replaced by merely tracing the origin of present problems or by weaving into the treatment of other subjects the fascinating story of their development. What history may accomplish as a systematic study is so important, so significant to our common life, that it could be dispensed with only at a very great loss.

The consciousness of a common past as a social "binder." — What is this important something that the systematic study of history may provide? A suggestion toward an answer to this question may be found in the preceding chapter. In emphasizing the significance of the art of writing, we said that with writing came "the possibility of *a continuing tradition that served to bind people together in larger and larger social groups.*" It is this consciousness of a common past that forms the basis of all national groups. Even primitive peoples have recognized this fact, — perhaps more or less dimly but none the less effectively. Almost instinctively they have striven to keep alive the traditions of the tribe, the clan, the embryo nation. The development of writing, as we have seen, made this a much easier process, and the development of printing has made the complete loss of tradition almost an impossibility. With the evolution of universal education, one of the primary duties laid upon the schools of every country has been to preserve and strengthen the national ideals as these are reflected in the nation's history.

The development of national unity as a function of the study of history. — There has been much discussion, especially since the Great War, as to the advisability of thus perpetuating and intensifying the nationalistic spirit through the study of national history. It is held by some people that a permanent peace among the nations is impossible as long as each nation indoctrinates its children with its own "patriotic" ideals. A few, indeed, have even gone so far as to advocate a complete break with the past, — a gigantic effort to erase tradition and to begin anew with a "clean slate." Not many serious students of the problem, however, would take so extreme a view. Nor has the outcome of the War been in any way favorable toward a diminution of the nationalistic spirit. Old nations, long submerged within overgrown empires, have been revived, — Poland, Finland, Esthonia, Czechoslovakia; new nations have been formed from the union of contiguous peoples that have long been related in language and tradition, — Yugoslavia; and the national pride of each of the countries associated as victors in the struggle has been given a vast access of new strength through the very fact of struggle and victory.

The dangers of a narrow nationalism. — It is fairly clear, then, that the time is not opportune for so drastic a process as "breaking with the past," even if this were either humanly possible or socially desirable. But this does not mean that education may not do something, — and in the end perhaps a very important something, — to keep national pride within bounds, to prevent aggression, promote international good-will, and make im-

probable if not impossible another world conflict. And it may be that the study of history, which has been blamed for many of the evils of nationalism, can itself be directed toward an elimination of these evils while, at the same time, it preserves the unquestioned benefits which the consciousness of membership in a national group involves. In other words, the best hope for a permanent and enduring peace may well lie, not in the probably futile attempt to forget history, but rather in a broader and richer and more penetrating study of history.

Let us try to see how this may be brought about by first learning why it is that the study of history has so profound an influence upon the way in which men think and feel and act.

The psychology of patriotism. — It will be recalled that in Chapter II we contrasted with a youth who had lived vicariously through the important events of our country's history an unlettered mountaineer who had actually lived through the same period. In setting forth the advantages of education through vicarious experience, this statement was made: "It reduces to terms of individual experience the vast sweeps of race-experience. The individual, so to speak, personifies the group. The group's struggles, extending over generations, become his struggles; its tragedies become his tragedies; and its triumphs, his triumphs."

If the reader will analyze the feeling that he has when he speaks of "My country," he will find, we believe, that he has actually thought of himself as playing a part in the events that constitute its history. These

things *belong* to you, and they form a powerful bond uniting you with all others who share the same possession. You have the feeling that what you are now is due in large part to these happenings in which you have vicariously participated. The members of a family are bound together, not alone by "blood relationship," but also and perhaps more strongly, by an identity of experiences. Under conditions which were once universal and which are even now fairly prevalent, the members of the family lived a very intimate life of common thought, common feeling, and common striving, and it is these common experiences that engender common sympathies, affections, and loyalties. Where these are supplemented by honored traditions of what one's forebears have accomplished, the binding force of these common experiences is immeasurably strengthened.

Now patriotism is, in a very real sense, only a generalization, a broadening, of this family loyalty and devotion. In our country, indeed, where "family" has lost much of the prestige that it has in other countries, patriotism may almost be said to be a substitute for the older sentiment. It provides something that human nature seems to crave, — something to identify one's self with, to revere, to be loyal to. Mr. H. E. Bourne traces this connection of patriotism with family pride by referring to the force and fineness of the ideal expressed in the phrase "*noblesse oblige*":

> "Why does 'nobility oblige'? Simply because the boy or man has entered into a larger realization of what he is through his knowledge of the traditions of the house. In the same way the honorable record of a regiment, of a ship of the line, the tradi-

tions of even-handed justice that surround certain courts, elevate and clarify the consciousness of the men who make up their personnel. So the boy and the girl may, through the proper study of history, learn better to know themselves in relation to their community, their State, and their country. . . .

"If a boy be told to love his country, he might properly inquire, What is my country? It would not be enough to show him a list of the States, or the flag, or to name the leading politician who happened to be President. His real country has much that is invisible built into its very structure. It is Washington's long struggle to found and organize the republic; it is Jefferson's dream of democratic equality; it is the deeds and words of men who from period to period guided public opinion and settled the national policy, of those who spread civil communities from the Atlantic to the Pacific, who built up our industries and laid the foundations of our national life. Each act in all the great drama has added its bit to the reality of the whole." [1]

It would seem, then, that the popular demand that the schools, whatever else they do, must "teach patriotism" has back of it something that is both fine and fundamental. The danger is incurred when, at the behest of those who have selfish or partisan interests to promote, the teaching of patriotism becomes a teaching of one-sided or distorted history. A most serious defect in the teaching of our own national history, for example, is the fallacious assumption that it began in 1776, — or at the earliest in 1492. As a matter of fact, the roots of our present American institutions lie in the remote past, and out of that past have grown, not only our institutions, but those of other nations many of whose people have come to our shores, bringing with them traditions, ideals, and points of view some of which will inevitably

[1] H. E. Bourne: *The Teaching of History and Civics*, pp. 51, 54. Longmans Green, 1909.

be woven into the fabric of our national life, and which we should consequently be in a position to understand and evaluate.

World history as a check against a narrow nationalism. — Beyond this, however, is another and a more vital issue. Beyond the national jealousies and prejudices and superstitions that tend to keep the world in discord is the common past of humanity itself, to relive which in the sense in which each nation re-lives its own history, may do much to bring peoples together. Viewed in this way, the study of history, while still preserving the finest elements in the traditions of each nation, may well furnish the basis of a common understanding, a common sympathy, and a common respect. It was with this idea in mind that Mr. H. G. Wells wrote his *Outline of History*. Whether or not he has overrated the influence of historical study, his motive is one with which it would be impossible to quarrel, and the ideal that he has projected is worthy of the most serious consideration:

> "The need for a common knowledge of the general facts of human history throughout the world has become very evident during the tragic happenings of the last few years. Swifter means of communication have brought all men closer to one another for good or for evil. War becomes a universal disaster, blind and monstrously destructive; it bombs the baby in its cradle and sinks the food-ships that cater for the non-combatant and the neutral. There can be no peace now, we realize, but a common peace in all the world; no prosperity but a general prosperity. But *there can be no common peace and prosperity without common historical ideas.* Without such ideas to hold them together in harmonious coöperation, with nothing but narrow, selfish, and conflicting national traditions, races and peoples are bound to drift toward

> conflict and destruction. This truth, which was apparent to that great philosopher Kant a century or more ago . . . is now plain to the man in the street. . . . A sense of history as the common adventure of all mankind is as necessary for peace within as it is for peace between the nations."[1]

Mr. Wells's phrase, "a sense of history as the common adventure of all mankind," brings out clearly the significant and unique characteristic of the study of history. Even though one may disagree with Mr. Wells as to the importance of the study of world history, this statement of what history really accomplishes in education is a contribution of no small value. A "sense" of American history as "the common adventure" of all Americans may, in any case, be accepted a worthy objective in American education.

History as a dynamic force. — What has been said is perhaps sufficient to show that, while the "ideas" taught and learned in the history classes do not affect conduct in the direct and unequivocal fashion in which the ideas taught in the arithmetic, language, and hygiene classes affect conduct, they nevertheless may have, and unquestionably in many cases do have, a deep and lasting influence. A certain kind of history taught with unceasing vigilance for more than forty years was no small factor in impelling the German people to follow their leaders in the effort to make for their nation a "place in the sun." Another kind of history taught with equal vigilance in the French schools over the same period was no small factor in the blighting of Germany's ambitions. One cannot view such processes and still

[1] H. G. Wells: *The Outline of History*, vol. i, p. 6. Macmillan, 1920.

maintain that the study of history is merely a "cultural" activity without influence on the "practical" affairs of life. On the contrary, when one considers large groups of people, such as those that make up the modern nations, one may reasonably conclude that no part of the school program has a more profound bearing upon a nation's character and a nation's destiny.

Literature as a Liberal Study

The significance of imaginative experiences. — We turn now to a third group of the liberal studies, — the group that is most clearly represented in the school program by literature, but which, in a comprehensive treatment of the field, would also include the products of the other "fine arts," — music, painting, sculpture, and architecture. The essence of the fine arts and especially of literature lies in the fact that they are records, not primarily of actual *happenings*, but of *imaginings*. It is hardly too much to say, indeed, that the greatest literature is a record not of facts but of dreams. What justification (it may be asked) has so expensive a process as public, universal education to deal with anything so unreal as dreams when a substantial world of facts lies all around in space, and when an almost equally substantial world of facts lies back of us in time?

The recreative value of such experiences. — The answer to this question involves the recognition of a fundamental truth; the truth, namely, that the human mind is constantly projecting itself beyond the world of actualities, beyond what is or has been, into the realm of what may be and, — even more importantly, — what

should be. It is not only impossible for the individual to escape this tendency, — it is one of the privileges of life that he can look beyond the actual into the world that his imagination opens to him. In the first place, it is there that he is most likely to find relief from the burdens and perplexities of everyday existence, to "re-create" himself with new hopes and new visions. Even if we admit that an overindulgence of this tendency may result in the futile dreaming of the visionary, we must also admit that its temperate indulgence is in a very real sense a source of renewed strength and renewed hope.

Imaginative experiences as the source of dynamic ideals and standards. — The influence of imaginative experiences strikes much deeper than this, however. The best products of literature and of the other fine arts are not only the means to a wholesome and upbuilding recreation, they are also records or interpretations of the most penetrating and dynamic of human experiences. We do not ask whether "Hamlet" is true to *fact;* we ask rather whether it is true to *life;* and by that we mean, Does it reveal or portray something that every normal mind will recognize as worthy, — as "true" in the most fundamental, human sense? The great novel or the great drama may create a quite imaginary situation, perhaps with an almost complete illusion of reality as in *Robinson Crusoe,* perhaps with so fantastic and impossible a setting as *Alice in Wonderland;* but through this created situation something of recognized worth shines out. This something may take the form of an ideal, an aspiration, a standard for judging character

and conduct, a revelation of the interplay of motives, an interpretation of life in one or more of its countless phases. What we find above all in literature is a record of the way in which some of the most gifted minds of all time have thought and felt about the deeper and more persistent problems of life, — the problems which, in spite of the advances that science and invention make possible, must be faced afresh by each generation.

Literature deals with the persistent problems of human life. — The emphasis upon the persistent character of these problems is of the utmost importance. We do not go to the works of the Greek physician, Galen, for our knowledge of medicine; nor do we go to the books of the old Roman writers on agriculture to learn how to grow crops and feed cattle. Modern science has developed far beyond the point that the Greeks and Romans reached. The external world to-day is a quite different world from that in which they lived. But there are some things that do not change. Men still love and hate and strive and suffer. Human nature does not change; and one may still find in the literature of the remote past interpretations of human nature and portrayals of human character that are unsurpassed if not unequaled in the modern world.

The ethical implications of literature. — If one were to ask whether literature affects life the answer would be unequivocal. Literature has influenced profoundly the way in which men think and feel and act because it has revealed and formulated ideals toward which to strive and standards for judging conduct. In this respect its influence is analogous to, although not identical

with, that of religion. The teaching of religious doctrines is not a part of the program of American public schools, hence literature is probably the most effective vehicle at the command of the schools for imparting the fundamental ideals of life and conduct. This does not mean that everyone who "takes a course" in literature will for that reason accept and act upon the ideals and standards that are revealed through the literature which is studied. (For that matter, does everyone who attends church and Sunday school act consistently with religious teachings?) It does mean, however, that the ideals and standards are there, and that a good teacher of literature may do much to make them dynamic forces in the lives of his or her pupils, — although perhaps the one thing that good teachers of literature would *not* do is directly to preach a moralizing sermon with a masterpiece of literature as a text!

The unique contribution of literature to life. — Literature, then, does not constitute an exception to our general principle that the materials of education are, in a final analysis, products and records of human experience. The kind of experience that produces great literature, however, is of a somewhat different order from the kind of experience that has produced arithmetic, geography, and history. Literature is an *interpretation* of life, — in Matthew Arnold's famous phrase, a "criticism of life," — rather than a record of actual happenings or a description of actual objects. When we read Stanley's account of what he found in Central Africa, we may be able in imagination to see Central Africa very much as we might have seen it had we ac-

companied Stanley on his journeys. But we might live through a long span of life in intimate contact with all sorts and conditions of men and not see in human nature what Shakespeare saw. It was the essence of Shakespeare's genius that he could detect traits of human nature that others could not see; but once he caught these traits and crystallized them in his writings, they became relatively clear even to average minds.

The importance of portraying human character in types. — It is this keen characterization of human nature in type forms that gives to the masterpieces of imaginative literature much of their value as materials of education. Shylock is a symbol of avarice, Macbeth of vacillation, Othello of jealousy; Micawber will go down the ages as the outstanding example of respectable and well-meaning inefficiency; Becky Sharp and Hester Prynne represent contrasting types of womanhood; Tom Sawyer and Huckleberry Finn are concrete, living embodiments of most of the good and some of the evil that is in every boy. These and the other great characters that our literature portrays have played and will continue to play a very important part in the life of English-speaking peoples. They give us common standards of comparison, common terms in which to discuss the problems that arise in dealing with men and women and children. Beyond this, too, they give us concrete and definite pictures of types of conduct that we recognize clearly as worthy or unworthy of emulation.[1]

[1] Nor is the value of literature as a source of common ideas and common standards limited to these portrayals of individual character as revealed in individual conduct. Fiction and the drama portray also community and group types. Mr. Sinclair Lewis's conception of *Main Street* may or may not live on as a dynamic idea in future generations, but the rapidity with

The fundamental influence of children's literature. — The instances that we have just cited do not in general represent the kind of literature that children will read in the lower grades. What is true, however, of the masterpieces that are addressed to the mature mind holds with even greater force for the literature of childhood. While the latter may be simpler than the former, it is often older and far more fundamental. Even the children's "classics" that bear the names of modern authors are not infrequently modern versions of world-old stories, — Hawthorne's *Wonder-book* and *Tanglewood Tales*, for example. Probably no literature that is to-day extant has had a longer life than have the folk-lore, the fairy tales, and even the nursery rhymes that delight generation after generation of children. The teacher who deals with these fundamental forms of literature will do well to form some acquaintance with their history, and to recognize what powerful forces the ideas and ideals that they represent may be in the later lives of the boys and girls who read them or listen to them with such keen enjoyment. There is doubtless a far deeper influence at work here than most of us recognize, — certainly a far deeper influence than we can definitely trace. It is probably in connection with these fundamental and appealing materials that one of Mr. Wells's keen observations finds its chief justification:

> "The driving force that makes for either peace or war is engendered where the young are taught. The teacher — whether

which the term became current is proof that the author succeeded in making clear and definite something that a great many people recognized once it was set forth, — something, undoubtedly, that they had been dimly conscious of and had probably struggled themselves to express.

mother, priest, or schoolmaster — is the real maker of history; rulers, statesmen, and soldiers do but work out the possibilities of coöperation or conflict that the teacher creates. This is no rhetorical flourish; it is sober fact. The politicians and masses of our time dance on the wires of their early education."

The Liberal Study of the Natural Sciences

The rapid development of the natural sciences. — No departments of human knowledge have grown and expanded within the past half-century as have the natural sciences, — astronomy, physics, chemistry, geology, botany, and zoölogy. Our age is preëminently the age of science. Not a year passes without its new "marvels" of discovery in this field of endeavor. Not a year passes that does not witness some profound change in the conditions of everyday living for which the scientist is primarily responsible. Of all of the fundamental forces that to-day are working toward the improvement of human life, science is far and away the most powerful.

The ideals and methods of science. — The unquestioned achievements of the natural sciences give to the ideals and methods of science a place of paramount importance as parts of the precious heritage with which education deals, and which it is the teacher's chief duty to "transmit unimpaired and with some increment of meaning" to each succeeding generation. It is these ideals and methods of science that lie back of the achievements, — it is these that have made the achievements possible. It would, indeed, be a great loss if the *material products* of science were suddenly and completely swept away; but if the spirit and ideals and methods of scientific study remained, the loss of the products would

not be irreparable. If, however, the spirit and ideals and methods of science should be lost, the products themselves would not long remain. Such a loss would be a calamity of the first order; it would mean nothing less than the death of our civilization. It is well for us to remember that earlier civilizations disappeared from the face of the earth, not because their material products were destroyed, but because the spirit and the ideals which lay back of the products faded from the minds of men.

The study of science in the universal school. — It would seem, then, that the modern universal school should lay a very heavy emphasis upon the teaching and study of the natural sciences. As a matter of fact, the study of the sciences as such has still a place of very slight importance in universal education. This does not mean that those who have been responsible for the development of elementary education have not recognized the importance of science and the need of giving it a place in the school program; they have done something, but in spite of their sincere efforts, the problem still remains unsolved. In the elementary school, "nature study" has come closer to complete failure than has any other school subject. In the high school, the natural sciences have had a wider recognition, but the results as far as the great masses of pupils are concerned have been admittedly meager. The solution of the problem of science teaching, both in the elementary school and in the high school, still lies in the future.

Some reasons why the teaching of science as such has been neglected in the lower schools. — An intelligent effort to

solve this problem should aim first to find the reasons for the unsatisfactory results so far attained. Certain conditions that have stood in the way of a solution may be briefly referred to here:

1. Many of the findings of science are woven into other school subjects. We have already seen how the work of the scientist is represented in geography. In the following chapter we shall discuss the *applied* sciences that have recently been given a place of large importance in elementary and high schools, — especially the industrial arts and the health studies. Some students of the problem believe that the study of science in the lower schools may well be limited to these applications. Important as these applications are, however, it is questionable whether this limitation of the study of science will insure upon the part of the great masses of the people a keen appreciation of the fundamental ideals of science or a sympathetic understanding of its essential method.

2. Another reason why science has not achieved the recognition in universal education that its importance demands lies in the pressure that rests upon the school to do the things that seem on the surface to be most in need of doing, and to neglect things that seem to be looking after themselves fairly well. Natural science apparently belongs in the latter class. It is taking care of our health, our food, our transportation, our industry, and even our warfare with an efficiency that makes us stand aghast. The better it does these things, the more likely we are to take it "for granted," — to be satisfied with the product without troubling ourselves to inquire into the process. But can the vast structure which science is building safely

remain a mystery to the average man, — a fairy godmother or an Aladdin's lamp that will do his bidding swiftly and unerringly, albeit by means that pass his understanding? Servants of this type have in the past shown a clear tendency to reverse the rôle, and sooner or later to play the master. It should be recognized, too, that the progress of science will itself be handicapped if the common mind fails to grasp in some measure its deeper meaning. The host of "anti" cults, from the anti-vaccinationist to the anti-evolutionist, are witness (and by no means mute witness) to the need of science in mass education.

3. In the third place, there has been and there still is a wide difference of opinion as to the best ways in which to teach science in order to insure the understanding and appreciation that are the desired outcomes. The spirit, ideals, and methods of science have been very late developments in human evolution; it took the race a long time to learn them; it is not to be expected that the task of insuring their perpetuation and further development through education will be easy. A good example of the difficulty is found in the subject that now represents the scientific movement in the elementary school, — namely, "nature study." The proponents of nature study have insisted that books are *tabu*, and that the only way in which to give children an insight into the spirit and methods of the natural sciences is to have them study nature directly. But the teacher who can guide such study effectively is very rare — and he himself cannot be in any sense ignorant of what others have found out about nature. It is indeed doubtful whether science can

ever be given the place that it deserves in universal education unless some means are found whereby the teacher may be enabled to make an intelligent use of such guides and helps as books supply in other fields. Direct experiences in "observing" nature will certainly be no less valuable if the observer has caught something of the difficult art of observation from those who have practiced it most successfully.[1]

The great opportunity in science teaching. — The present situation is, indeed, a distinct challenge to the ambitious and resourceful teacher who is interested in the natural sciences and who sees clearly the value of inculcating in children the spirit of scientific inquiry. The problem is literally crying out to be solved. It may be that some student who is now preparing to teach will be the one to point the way. It is clear enough that he or she will have some towering obstacles to overcome; but therein lies the glory of conquest. If anyone can solve this problem or contribute notably toward its solution, — if anyone can give to the spirit of science a place in universal education that is at all commensurate with the rôle that it is playing in modern civilization, — he or she will have a niche in history that will not be far below those occupied by the great masters of science.

[1] It is possible than an understanding and appreciation of science may best be approached through a combination of "direct" and "vicarious" experience rather than exclusively by the former as the leaders of the nature-study movement have insisted. One who does not know what the scientific method means can scarcely do better than to follow Darwin in his fascinating description of the way in which he found out what earthworms do and the way in which they do it (see his *Formation of Vegetable Mould*), or to follow Tyndall in his crystal-clear exposition of the way in which a glacier moves (see his essays on *Forms of Water*). We venture the guess that the average teacher could direct such a study with an average class far more effectively than he or she could direct an actual study of earthworms in the garden or of glaciers in the Alps.

Summary: The Significance of the Liberal Studies in Democratic Education

The social need for a community of culture. — The materials discussed in this chapter have an important place in the program of education primarily because they widen and deepen the experience of the learner. They represent in a typical fashion some of the most significant parts of the social heritage, and their effective mastery will mean a richness and fullness of the individual's life that would otherwise be unattainable. While this alone would amply justify the schools in making provision for their study, they have a far deeper social function. As we have seen, common ideas, ideals, and aspirations are the great binding forces that hold individuals together in coöperative groups. The liberal studies that can be made common to all are the most dependable source of these common, vicarious experiences. The conditions of life vary widely in different communities and even among different individuals and groups in the same neighborhood. The provision of a common culture, — of common vicarious experiences, — counteracts these variations, and makes possible large social units.

Common denominators of experience. — It is not too much to say that the chief function of education in a democracy is to insure this "community of culture." It is not that all are to think alike on every question. Far from this, everyone should be encouraged and stimulated to think for himself. But it is essential to collective action that all have common terms in which to do their

thinking, common standards for judgment, and some measure of common aspiration toward the realization of which united action may be directed. Just as the worth of gold is greatly increased because it is a common denominator of value, so the worth of ideas and ideals is greatly increased when they become common denominators of experience among larger and larger groups of people. If, for example, the President of our country wishes to discuss with the people an important policy of government, the fact that he can refer to events in our past history or in the history of other countries with confidence that the people will understand him gives to the common knowledge of these events a very large and significant value. If it would serve his purpose to sum up in the name of a great character in literature a thought that he wished to convey or an ideal toward which he would point, there would be a decided advantage if he could know that those to whom he made his appeal would understand his meaning. Lacking this basis, his discussions would necessarily be limited in content and scope; they would the more likely be an appeal to prejudice rather than an appeal to reason.

The educational basis of an effective democracy. — The liberal studies, then, have a place of unique importance in a scheme of democratic education. Democracy, according to one of its most distinguished students, Lord Bryce, means the control of the social group, not by any individual or group of individuals, but by the people as a whole. This is the form of social organization that our own country represents; it is the form of social organization that is now predominant throughout the civilized

world. Two fundamental principles crystallize the basic significance of universal education to democracy:

1. The efficiency of a democracy is dependent upon the number and quality of the ideas and ideals that are common to all of the members of the democratic group.

2. The level upon which a democratic society does its collective thinking is dependent upon the level to which educative forces have raised the great majority of its members. *A high level of common culture is essential to collective thinking on a high plane.*

The "race between education and catastrophe." — The schools of a democracy face a tremendous task in their efforts to solve this problem, — a task so tremendous that there are many who are quite ready to pronounce the effort futile. These critics point particularly to the apparently low level of native mentality among the great masses of the people,[1] and either openly or by an easy implication advocate a return to the form of social organization that restricts the control of human destiny to a chosen few. Others are far more hopeful, basing their faith in large part upon the results that universal education has already achieved. And there are still others who recognize that, whether for good or for evil, it is too late now to set back the clock, — no matter how great the handicap, it is now, as it has never been before, "a race between education and catastrophe."

Questions, Exercises, and Problems

1. Explain why and how parallels and meridians came into use in geography. What would geography be without them? What is the social significance of trade and counter-trade winds?

[1] See below, ch. viii.

2. What are the conventional, or conventionalized, symbols of geography? What adventures in geography have you taken vicariously?

3. Inventory the food, utensils, and other things (including the tables, dishes, and linens) that were involved in your "breakfast experience" this morning. From this inventory, make a list of the occupations that have served directly or indirectly in making your breakfast possible. Estimate for each occupation its approximate age, as fifty years, two hundred years, etc. Which of these occupations indicate a "conquest of a portion of the material environment"?

4. Why did you feel "lost" when you first came to the school you are now attending? Explain the difference between your feelings and those of returning seniors. What binds th alumni to the institution? Why is there so frequently bitterness between "gown and town" in college communities?

5. How long did it take for the Civil War bitterness between North and South to die out? What were the "carpet baggers"? Give illustrations of strangers being regarded as "carpet baggers" in recent years.

6. In what sense is it true that "blood is thicker than water"? Why has "family" lost prestige in the United States? What is meant by the "old families" and the "best families"? What is meant by "family tradition"? By "national tradition"? Why is it so difficult to develop a "county patriotism"?

7. Name five literary masterpieces that you have read and point out the "something of recognized worth" that is brought out in each.

8. List the pieces of literature that you distinctly remember to have come in contact with in the elementary school. Make a list for the entire class. What is meant by the "literature of power" as contrasted with the "literature of knowledge"?

9. In your opinion what school studies are most desirable as elements in a common culture which will tend to unify all of the people?

10. What educative experiences other than school studies serve as "social binders"? (Think of the common experiences that are involved in the life of the home, in daily work, in politics, in religion.)

Suggested References

Discussions of the liberal aspects of the school subjects will be found in the following books:

For geography:

E. Huntington and S. W. Cushing — *Principles of Human Geography*, ch. i. Ginn, 1921.

W. J. Sutherland — *The Teaching of Geography*, chs. i, ii, iv, v. Scott, Foresman, 1909.

For history:

H. Johnson — *The Teaching of History*, ch. i. Macmillan, 1915.

F. G. Bonser — *The Elementary School Curriculum*, ch. xi. Macmillan, 1920.

H. E. Bourne — *The Teaching of History and Civics*, ch. v. Longmans, Green, 1909.

J. W. Allen — *The Place of History in Education*, chs. viii, ix. Appleton, 1910.

H. G. Wells — *The Outline of History*, preface. Macmillan, 1920.

For literature:

P. Chubb — *The Teaching of English*, chs. i, xiii. Macmillan, 1902.

For science:

J. A. Thomson — "Science and Modern Thought," in *The Outline of Science*, vol. iv, pp. 1165 ff. Putnam, 1922.

O. W. Caldwell — "Achievements and Obligations of Modern Science," in *Science Remaking the World*, pp. 1–11. Doubleday, Page, 1923.

J. H. Robinson — *Mind in the Making*, pp. 151–167. Harper, 1921.

Chapter V

THE MATERIALS OF EDUCATION: *C.* THE PRACTICAL ARTS AND THE APPLIED SCIENCES

The "cultural" *versus* the "practical." — The liberal studies referred to in the preceding chapter are often spoken of as "cultural" in their character, and as such are frequently contrasted with the so-called "practical" studies. There has been a widespread conviction that studies of the cultural type are "impractical"; that most of them are ornamental in their function rather than useful; and that they are useful chiefly in providing leisure-time interests. The source of this conviction is not far to seek. The privileges of the broader education until very recently were for the select few, not in any sense for the great masses of the people. As a consequence those who enjoyed these privileges were quite likely to be persons whose means made it unnecessary for them to toil for a living, and who themselves were inclined to look upon learning merely as an ornament. The phrase "an accomplishment," sometimes used in referring to an amateurish mastery of foreign languages or music or drawing, reflects even to-day this older notion that education beyond the rudiments of reading and writing is chiefly something ornamental, — something that merely sets one off from the common run of men and women.

The confusion of culture with intellectual snobbery. — It is true, too, that this narrow conception of culture did not reflect a sympathetic attitude toward those who do the necessary routine work of the world. Education offered an escape from work of this type, and those who enjoyed the advantages of the broader education did not often stop to think that their freedom from manual toil was purchased by the toil of others. They were (and many of them still are) inclined to look upon their privileges as inherent rights. Thus the cultural types of education have come to be associated with the airs and attitude of the aristocrat; to the liberal education there still clings the tradition of inutility; — although as was pointed out in the preceding chapter, no materials of education have a deeper and more fundamental influence than do the liberal studies, and no group of studies is more significant to the safety of democracy and the progressive development of democratic institutions.

Beneficial results of the reaction against the narrow conception of culture. — Fundamentally important as they are, however, it has been by no means a bad thing for the liberal studies to be "under suspicion." In the first place, the suspicion has stimulated those who believed in culture to reinterpret their belief from a social point of view, to recognize that the "culture" represented by the liberal studies did not always liberalize, and to formulate their aims anew with social service rather than individual advantage as the chief objective. In the second place, the reaction against the narrow conception of culture brought into the schools a new group of materials, which not only bear directly upon the practical affairs of every-

day life but also exert in themselves a liberalizing influence which in many ways compensates for recognized deficiencies in the older liberal studies. We shall discuss this new group of materials under two heads, the "Practical Arts" and the "Applied Sciences." As in the two preceding chapters, we shall consider chiefly under these heads the materials that are most significant from the point of view of universal education.

The Practical Arts

The antiquity of the practical arts. — While we have referred to the practical arts as relatively new school subjects, it does not follow that the arts themselves are new. On the contrary some of them are among the oldest parts of the social heritage. Long before articulate speech had reached even a moderate degree of refinement, it is altogether likely that certain other skills had been well mastered. Far back in the Old Stone Age, man learned to make fire, to cook some of his food, to chip flinty stones to a fairly sharp edge, and to fashion crude weapons. It is possible that, even in that remote time, he learned something about cultivating plants, and perhaps he had already domesticated one species of wild animal — the dog. Even with limited powers of speech, these arts could be passed on from generation to generation and improved little by little.

Development of the practical arts in the Neolithic Age. — During the relatively long period (not less, probably, than 5000 years) that constituted what is now called the Neolithic or "New Stone" Age, still further progress was made in the fundamental practical arts. Long

before men had learned to make written records of their experiences, they had learned how to cultivate the soil. Through the long ages they had also learned how to breed and train animals. A very large proportion of the plants that we cultivate to-day and practically all of the animal species that are now bred for human food, human service, and human companionship are, in their cultivated or domesticated forms, far older than recorded history. Professor John M. Tyler has given us a picture of life in the latter part of the New Stone Age which summarizes some of the conclusions of the archæologists who have studied the remains of the Lake Dwellers in Switzerland:

> "Could we have sat on one of these village platforms of a summer afternoon and looked out to the wheat fields on the shore, and seen the canoes come in with fish or game, and the cattle returning from the mainland pasture; could we have watched the men fashioning implements and all manner of woodwork, and the women grinding the grain or moulding pottery, or spinning and weaving; we should have found a great deal to please and interest us. The fruits and berries, the smell of roasting fish and baking bread, of cakes well flavored with the oil from beechnut or flax, or perhaps sifted over with the seeds of poppy or caraway, would have been far from disagreeable. We should have felt that it was a goodly land, and that life was well worth living. We should not have been disturbed by shrieking steamboats, puffing and groaning locomotives, or honking automobiles, or by telegraphs or telephones, by letters which must be answered or books which must be read. There were no stocks and bonds, bill or notes, strikes or lockouts. There was no labor question; all simply had to work. No one went to school, except to nature, and there were no lectures. 'The name of that chamber was peace.'"[1]

[1] JOHN M. TYLER: *The New Stone Age in Northern Europe*, pp. 89 f. Scribners, 1921.

The early use of metals. — In the centuries that followed the New Stone Age and still preceded the invention of writing, further progress was made. Indeed, the great turning-point in social evolution that closed the New Stone Age and ushered in its successor was marked by the development of an art that was second in importance only to writing and printing in its influence upon human development. This was the art of refining metals.

Copper. — When and how men learned to smelt ores and thus secure metals that could be used for making weapons and tools, no one knows. It is known, however, that before ores were smelted, one kind of metal had been discovered that could be used in its native form for certain purposes. It is the only metal, indeed, that is found in large amounts in a pure form, — namely, copper. Probably the first chunk of native copper that primitive man found did not impress him very much. It was not so good a material for making hatchets and spear-heads as were the harder flints. But it had one important quality the value of which sooner or later came to be recognized; it could be pounded into various shapes and it could be brightly polished. Even primitive man liked to adorn himself; he loved beautiful things; and copper could be made into attractive ornaments. It was also used to some extent for making needles and pins, and more rarely for making knife-blades and axes, although these could never be given an edge that would hold its sharpness.

Bronze and iron. — There is, however, another metal which, when melted with copper, forms a fairly hard combination or alloy. This metal is tin, and while it is

seldom found in nature in a pure form, some of the ores containing it are so rich in tin that they can be easily fused with copper to form bronze. Primitive man somehow and somewhere stumbled upon this fact, — and the discovery, whenever and wherever it may have occurred, was one of the most momentous events in human evolution. Man had now a metal that could be hardened and polished and given a keen and fairly lasting edge. It is not so good for making edged tools as is steel, but it is far better than copper. But beyond this, man in making bronze mastered the twin arts of refining metals and of molding them, while still in liquid form, into a variety of shapes. The use of tin-bearing ores for making bronze suggested that other metals might be extracted from other ores or earths which give at first glance no hint of the presence of the metals. Thus the way was open for experimenting with earths, and in the course of time — long in itself, but much shorter than the period that constituted the New Stone Age — the Bronze Era gave place to the Age of Iron.

The early household arts. — During the long centuries that preceded the beginning of recorded history, then, mankind had gradually mastered the basic elements of agricultural and industrial art. Nor had the so-called household arts lagged behind. In the Lake Dwellings, a competent archaeologist reports, "every house had its loom."[1] "We find not only threads, cords, twine, and nets, but cloth of varying pattern and design. Some pieces were so finely woven and well preserved that their discoverers could hardly believe that they were not of

[1] Cited by Tyler, *op. cit.*, p. 83.

modern make."[1] There is evidence, too, confirming the conclusion reached from the study of still earlier periods that, in the practical arts of primitive man, beauty and utility developed together; for, we are told, "Fringes and embroidery occur."

Why the practical arts were so long neglected in formal education. — The practical arts, then, had undergone a long development before writing was invented; they underwent another long period of development before they were recognized as materials of formal education and incorporated in the programs of the schools. It is not difficult to see why their educational recognition came so late. In the first place, many of them were so thoroughly interwoven with the daily lives of the people that children learned them almost as a matter of course from watching the processes, imitating them in play, and while still very young lending a hand to help their elders. This was true of the household arts, especially, and of the agricultural arts among farming peoples. In the second place, the arts that very early became specialized developed an efficient system of training through apprenticeship which made it unnecessary for a long time to have these arts represented in the schools. Thus the mining and smelting of ores and the working of metals were not arts that everyone needed to practice; hence from the earliest antiquity these arts have constituted a recognized division of labor; (witness, for example, the wide prevalence of the trade-name, Smith, as a surname). In the third place, the basic *school* arts, reading and computation, became of practical importance to everyone

[1] TYLER, *op. cit.*, p. 84.

only when social organization had developed to a considerable complexity, and when a monopoly of these arts by a relatively few individuals gave to the latter an opportunity to exploit and oppress the masses. The first strong impetus toward universal education, — toward an effort to teach everyone to read, write, and cipher, — came with the democratic awakening. The prime need then was the intellectual enlightenment of the great masses of the people rather than an enhancement of their industrial efficiency.

The great changes brought about by the Industrial Revolution. — With the development of universal education, however, there came a parallel (and in part a consequent) development of industry. The application of steam-power to the machinery of production, manufacture, and transportation led to a far more elaborate specialization of industry than the world had ever known. It led also to the rapid growth of commercial and manufacturing centers. The profound changes in ways of living thus brought about are called to-day the Industrial Revolution. We are still too close to these changes thoroughly to appreciate their full significance; in fact, the Industrial Revolution is still in progress. Some of its implications for education, however, have already been clearly recognized. Among these is the need for incorporating in the school programs certain of the materials represented by the practical arts. Among the reasons that have justified this policy the following have been especially important:

1. *The specialization of industry.* — Machinery quickly carried the specialization of industry so far that many

workers came to be concerned with the production of only one fraction of the unit product. Where, for example, each shoemaker had formerly made the entire shoe from the start to finish, each worker in the shoe factory is now likely to concern himself entirely with cutting the leather, or stitching the pieces together, or nailing on the heels. Thus labor, instead of being artfully and thoughtfully directed toward a total completed product, has become more and more thoroughly fractionated, routinized, and mechanized. The machine has tended to make the worker himself a machine, and under these conditions it is the verdict of human experience that labor becomes humdrum drudgery, thinking lags for want of a stimulus, the imagination atrophies, and the most satisfying reward of effort, — namely, pride in a fine product, — is entirely lacking.

2. *The estrangement of master and workman.* — Machinery tended to estrange master and workman. Under the older system of industry, the master himself was one of the workmen. The apprentice very frequently lived with the master's family, and when the apprentice became a journeyman he was not distinguished in social status nor essentially in financial status from the master. But the factory hands work under the foremen who in turn are under superintendents; the modern substitute for the master, — namely, proprietor of the the factory or the executive officer of the corporation that owns the factory, — does not work with the men. His skill is of another type; his social affiliations are with another group; and his financial status is widely different from that of the routine workers. Thus the

Industrial Revolution has brought with it an accentuated class-consciousness upon the part both of the workers and of the employers, — a consciousness of class differences which has in many ways canceled or offset the equalizing influence of political democracy.

3. *The growth of the urban population.* — In the third place, — and, for the purposes of this brief discussion, finally, — the Industrial Revolution rapidly worked toward a relative depopulation of the rural areas and the concentration of population in urban communities. Cities, of course, are not new things in human history; urban centers rivaling in size all but our very largest modern cities existed in ancient times; and many of the cities of Europe during the Middle Ages were large and important. Never in the past, however, have the cities claimed so large a proportion of the total population as they claim to-day. The great majority of the people in ancient and mediaeval times and until very recently in modern times lived either in small villages or in the open country; hence whatever unfortunate effects city life may have involved did not influence a large proportion of the people. Offsetting the complicated and artificial life of the cities was the simple, stable, and conservative life of the country, — a kind of life which had its origin far back in prehistoric times and the roots of which lie consequently very deep.[1] To pull them up on a large

[1] Cf. J. M. Tyler, *op. cit.*, pp. 236 f.: "In the southeastern part of Europe in the latter part of the New Stone Age we find the people of the banded pottery who practiced an advanced form of agriculture. Here apparently the men as well as the women worked in the fields. We find their stone mattocks and ploughshares. Hoe-culture was giving place to ploughing. Here men were receiving a very different education and training from the hunters, fishermen, and herdsmen of the north, though there was also a gradual increase of tillage doubtless taking place. They were tilling the ground la-

scale means, as we are now learning, a profound readjustment, not only of social institutions, but of individual desires, prejudices, and standards.

New problems of education arising from the Industrial Revolution. — It is clear, then, that the universal school, which was first established to teach everyone to read and write, and which later undertook to give to everyone some knowledge of geography and history and some acquaintance with literature, music, art, and science, has of late years been confronted with the task of keeping alive, under greatly changed conditions, the arts and virtues which a simpler organization of society involved, and which are likely to be lost to large numbers of people as social organization becomes more and more com-

boriously, monotonously, doing what was wearisome and disagreeable for a reward sometimes large, sometimes scanty. The peasant farmer learns forethought, thrift, economy, industry, and a host of homely virtues, far less known to hunter or herdsman. He is no more a collector taking what he finds; he has gone into partnership with nature. He is studying her ways, moods, and whims. He amasses a steadily increasing store of most valuable lore concerning climate, weather, soil, plants, animals, and things. He is rooted in a little patch of ground. His outlook is narrow and he is slow to change. But he learns his lessons thoroughly. He may enter the school unwillingly but he stays in it.

"He has a permanent home even if it is hardly more than a hut, which is the centre of his life and thought. It is a hard, healthy life, and population increases rapidly under such conditions. He probably has a large family of children, and they educate and socialize him and one another. He is trained and moulded by 'home surroundings.' Is not this the history of the frontiersman or homesteader everywhere at all times? The home and family attachments and instincts are deeply rooted because very ancient and entirely natural.

"He lives in a village or neighborhood, which is hardly more than a great patriarchal family, closely united by intermarriage, and by the pressure of common work to satisfy common needs, common ownership of the soil, mutual aid in hard times. . . . We easily forget the civilizing, refining, and improving unremitting pressure and power of these simple, uninteresting peasant influences. He is learning to get on with the members of his family and neighborhood. He is experimenting upon his neighbors; his experiments and experiences may often be very trying to himself and them; the results may sometimes be disastrous. But he is not only practicing the essentials and fundamentals of morality very incompletely and without code; but a sort of preparatory course in government. It may easily be self-government in these small villages. The town-meeting originated here or somewhat farther north."

plex. The loss of the arts themselves might not constitute a serious problem; but the loss of the virtues would be disastrous.

The school has taken over many functions of the home. — The school has attempted to solve this problem in several ways. Recognizing the fact that the typical home no longer provides opportunities for children to become acquainted with such fundamental practical arts as those involved in agriculture, the handicrafts, and even home-making itself, the modern school has developed school gardens, school shops, and school courses in the household arts.

The practical arts as complements of the basic school arts and the liberal studies. — In the development of these phases of school work, it has been found both expedient and valuable to relate these practical arts to the older school subjects. The "making" of things affords innumerable opportunities for measuring and weighing. It thus not only leads to the application of what has been learned in the arithmetic classes but also shows clearly to the pupil the need for arithmetical skills and hence tends to stimulate or "motivate" further study. The materials that the practical arts involve, — woods, metals, foods, and textiles, — suggest interesting questions as to their sources and the means by which they are obtained, transported, and changed from their raw form to the form in which they are utilized in the arts; hence geography finds a wide field of application, and the study of geography takes on a new and richer meaning. Planning for constructive work puts a premium on thoughtful discussion and this in turn stimu-

lates clear expression; thus the study of language may receive a powerful impetus from the work in the practical arts. Finally, the processes which comprise these arts, as we have already suggested, have had a long and honorable history, to learn something of which is to take the first step toward an appreciation of what civilization means.[1]

The practical arts as related to the applied sciences. — In making a place for the practical arts in its program, however, the modern school has done more than merely to furnish a substitute for the training that the home and the ordinary occupations of life provided in the less complicated social organization of the past. In addition to this it has been a means whereby advances in science may be understood and appreciated by large numbers of those who will apply them to the practical arts. We have already called attention to the fact that many of these arts had their origin in prehistoric times, and that some have even persisted with very little change through all the centuries covered by recorded history. As long as these arts were transmitted from generation to generation largely through imitation, their improvement was a very slow process. Transmission of this type tends to be severely conservative; it stubbornly resists change. Each generation not only practices what the preceding generation has taught it to practice, but also feels that there is a certain sacredness about the procedure. "What was good enough for our

[1] F. G. Bonser in *The Elementary School Curriculum*, Macmillan, 1920, presents a well-wrought plan for organizing the various studies of the school around the interests and activities involved in the practical arts. Dr. Bonser (born 1875) taught in normal schools in Washington and Illinois, and became in 1910 a member of the staff of Teachers College, Columbia University.

fathers and grandfathers should be good enough for us," is a quite natural expression of this conservative attitude. This is good in so far as it insures the perpetuation of those things that are valuable; it is not so good when it blinds people to the wastefulness or inefficiency of the older methods. To make the industrial arts a subject of school study is one way of breaking through the crust of tradition and of insuring changes that are in the direction of progress. This has been particularly noticeable in the work in home-making that is now provided in the upper grades of the elementary school and in the high school, and in the work in agriculture offered in the high schools that serve farming communities.[1]

Vocational enlightenment and guidance. — In organizing courses in the practical arts, the modern school has also discovered a means of guiding boys and girls toward the occupations for which they are best adapted. Under the older conditions, family tradition was naturally the most important factor in determining the occupations followed by the children; the son tended to take up the occupation of his father. If this occupation was overcrowded and if, in consequence, the son had to look elsewhere, the field of choice was usually restricted to the occupations of the immediate neighborhood, — farming, fishing, mining, weaving, or what not.

[1] The development came first, of course, in the professional and technical schools. As long as physicians were trained by the apprenticeship system, the progress of medicine was slow and halting. With the organization of medical schools, a premium was placed upon the application of science to the art of healing. Learning by imitation gave place to learning through the mastery of principles. The development of engineering schools gave a similar impetus to the growth of engineering as a science, and this led in turn to rapid improvements in the practice or art of engineering. Agriculture is one of the latest of the occupations thus to "institutionalize" the training of its recruits, and again the result has been to change agriculture from an empirical "rule-of-thumb" art to an applied science.

The business and professional opportunities with which the young person was likely to be familiar were also limited to those in evidence about him. If he lived in a town or city, the example of the merchant or the lawyer might impress him with the possibilities represented by these callings; if he lived in the open country or the small village, he knew at least the doctor, the clergyman, and the small shopkeeper.

The need of vocational guidance. — Prior to the Industrial Revolution, these limitations in the choice of occupation were far less significant than they are to-day. At best the range of choice was relatively narrow, — although even then the city boy had a great advantage over the country boy. At the present time, however, the division of labor has been carried so far that occupational opportunities are almost innumerable, — and yet the occupations coming within the ken of any one individual are likely to be only a small fraction of the total number. These specialized occupations also tend to be localized. A farming community, for example, is likely to limit itself largely to dairy farming or grain farming or cotton farming. A manufacturing community specializes in cotton goods, felt goods, silks; in firearms, cutlery, typewriters; in glass, pottery, earthenware; in locomotives, cannon, structural steel; in leather products, dressed meats, prepared foods. Within these industries technical and professional workers are employed in addition to skilled artisans and machine operatives. The typical worker in a mammoth factory may have but a slight notion of the wide range of varied activities that the factory represents.

The practical arts as an agency of vocational guidance. — There has come about, then, a distinct need for a new subject of study in the schools, — the study of occupations for the purpose of helping young people to make an intelligent choice of a life work. This process of "vocational enlightenment" has not yet progressed very far, but one of the most promising beginnings has been made through the courses already established in the practical arts. In these courses boys and girls are made acquainted with the kind of work that the basic occupations demand. Some schools, indeed, provide a "battery" of such courses, organized with distinct reference to the guidance function. The pupils pass, during one or two years, from one of the school shops to another, spending from four to nine weeks in each, and gaining thereby a first-hand touch with woodworking, metalworking, plumbing, the electrical trades, printing, painting and decorating, machine-shop practice, automobile repairing, and the like. Those who find in this experience some field of work for which they seem to be particularly adapted are then permitted in the remaining years of the school course to specialize in this field. At the same time those who go into other types of work will have gained through this process a sufficient acquaintance with the practical arts to appreciate the significance of these arts and to respect those who follow them.

The liberalizing influence of the practical arts. —This need of appreciating the work that others do is, indeed, a most important justification of teaching the practical arts in the universal school. Experience, as we have seen (Chapter II), may be either personal or vicarious.

One may share in the life and activities of mankind by actual participation or by imaginative participation; but the latter to be effective must rest upon an interpretive basis of actual, personal experience. School training in the practical arts, limited though it necessarily is both in scope and in time, may do much to provide this interpretive basis, and upon this basis may be built a clear understanding and a keen appreciation of what the goods of life have cost in terms of human ingenuity and human effort.

A new conception of culture demanded by democracy. — We have already pointed out the long association of "culture" with leisure and freedom from toil, the consequent identification of the cultural with the merely ornamental, and the disposition of the broadly educated person to feel that he is superior to the common run of workaday men and women. This conception of culture is far too narrow to meet the needs of a democratic social order. And it is unnecessarily narrow. It is not in literature and art alone that the hopes, aspirations, and achievements of mankind have been caught and crystallized. A new machine, a device for reducing human drudgery, an improved tool or utensil that makes the day's work less wearisome and more productive, a new strain of live stock or an improved variety of fruit or grain perfected by long continued selection and breeding, — each of these is as truly a part of the social heritage as are the great poems and the great pictures.

Cultural possibilities in the common things of life. — The truly cultured person may be thought of as one who sees through to these deeper meanings of the common

things of life, and who because of this appreciates the more keenly the value of his heritage. He knows what these things have cost. He has a deeper respect for those who produce them, and perhaps even the stimulus to do his share of the world's necessary toil. If he is himself engaged in their production, he has a keener respect for his materials, a finer appreciation of the worth of his labor, and perhaps the stimulus to put into his work the creative element that may lift what would otherwise be routine drudgery to the plane of a fine art.

The civic and political importance of this broader conception of culture. — We have referred frequently to the basic need of a community of culture as the prime condition of the collective thinking and the united action that democracy involves. The broader type of culture which includes an appreciation of the common things of life and a deep and abiding respect for the efforts of those who produce them has an important function to discharge in this connection. Democratic institutions are threatened to-day not so much by the dangers of aggression from without as by the perils of dissension within. The Industrial Revolution has divided the people into occupational groups, the interests of which frequently conflict. The groups distrust one another, question one another's motives. In our own country capital and labor are held apart by a sullen hostility; suspicion and envy array the farming classes against the commercial and industrial classes; producer, distributor, middleman, and consumer are at four-cornered loggerheads. All this represents in part the continued maladjustment of those processes of social transformation

that began with the invention of the steam-engine, and the end of which is not yet in sight. The school cannot itself resolve these antagonisms, — but the school can lay the basis for the forces that will resolve them if anything can accomplish this end. In so far as dissensions among occupational groups are due to a lack of appreciation upon the part of each for the services that the others render, the recognition of the practical arts in the school program may well exert a powerful corrective influence.

Specialized vocational efficiency not an objective of elementary education. — Specific training for bread-winning occupations is not accepted in this country as a proper function of the elementary school. There is a general conviction that the earlier years of school life should be devoted to general education, the main features of which are common to all, rather than to specialized forms of vocational training. The practical arts in the elementary school, then, should be distinguished sharply from the specific vocational courses and curricula that the high schools are coming more and more generally to provide.

The Applied Sciences

Types of applied science. — It has already been pointed out that the applications of science have worked marvelous improvements in the practical arts, and that one of the benefits following from the recognition of the practical arts in education has been the wide and speedy dissemination of these improvements. The scientific study of navigation, agriculture, forestry, the mechanical

arts, and the household arts has yielded a multitude of dependable facts and principles which explain and justify certain empirical practices that have evolved gradually in the history of the race, and which also reveal clearly the waste involved in certain other empirical practices and suggest better methods of doing the world's work.

Most of these applications of science have their principal bearing upon education in connection with specialized vocational curricula in the high schools and colleges. Some acquaintance with them, however, should be gained in the elementary school, and as we have already seen (Chapters IV and V) certain phases of geography and arithmetic are important from this point of view. Modern geography, for example, teaches some of the fundamental principles that govern climate and which thus have important applications to agriculture and navigation; in its description of industry geography sets forth the basic industrial processes that underlie mining and manufacturing and which have been so profoundly affected by the work of the scientist; in emphasizing the problems of conservation, it makes numerous references to the developments of modern science in the fields of agriculture and forestry. Arithmetic is seeking in increasing measure to set forth the applications of its principles to problems of everyday life, and while these applications refer chiefly to commercial processes, the fields of agriculture and industry are coming to be included.

Health education. — There is, however, one group of school subjects which exemplify in a striking fashion the important influence of applied science in modern life.

These are the subjects that are grouped under the general term, "Health Education."

Many of the practical arts, as we have noted, are the oldest of all of the products of race-experience. This is not true in the same measure of the health studies and exercises. Among the nations of antiquity, one and, so far as the records inform us, only one, made the cultivation of health and bodily vigor an outstanding virtue. This nation was Greece; but while the modern interest in health education has been deeply influenced by the Greek ideals of physical beauty and grace, the strength of this interest and the growing demand for health education in the schools represent a thoroughly modern, — indeed, a very recent, — development.

The growth of knowledge concerning health. — The recognition and development of health education as an important part of the school program have resulted in large measure from the very great advances that have been made in the knowledge of health and disease. It should not be inferred that these advances came suddenly; on the contrary, they have back of them a long series of patient and laborious investigations. It is the recent culmination of these investigations in principles which give us a relatively clear understanding of the laws of health that has been sharp and "sudden." We now know that most diseases are caused by microscopic organisms, belonging chiefly to the plant-group, Bacteria, which gain access to the body and there set up fermentations. This discovery, however, was not made overnight. Before Bacteria could be known, the microscope had to be devised and improved, — and men worked with

single lenses for two hundred years before the combination of two lenses, which is the basic structure in both the telescope and the microscope, was hit upon. After the invention of the microscope nearly two hundred years elapsed before the existence of Bacteria was clearly demonstrated and their relation to disease clearly proved. Even then, further investigations of a most laborious character were needed to identify the specific kinds of Bacteria and other microörganisms associated with different diseases, and to provide means of combating or controlling each kind. It is the marvelous success of these latest investigations that has impressed mankind as a sharp and sudden advance.

The relation of this knowledge to health habits. — It is not only or chiefly this new knowledge of the laws of health that forms the materials of health education in the schools. That everyone should understand these laws is obvious, and fortunately the most important of them can be made clear through simple description and illustration even to fairly young children; but of far greater moment is the development of the habits and ideals of living that will be consistent with the laws. The outstanding practical lesson that has come from the discovery of Bacteria and their relation to health is the lesson of cleanliness. Next in importance perhaps are the practical corollaries that follow from the fact that a healthy, vigorous body may successfully resist invasion by these disease-breeding parasites. Certainly not least in importance are the relationships which fresh air, sunlight, nutritious food, wholesome play, regular habits, sufficient sleep, and temperance in all things bear to the

maintenance of bodily vigor. Finally, there is the significant fact of social responsibility in matters of health, — the danger of spreading disease, now made increasingly perilous by the gathering of large segments of the population in crowded cities. These are the larger problems with which health education as a definite part of the school program is concerning itself.

The place of play in the health program. — Especially significant to the rôle that the school must play in health education is the close relationship that has been discovered between wholesome play and good health. The playground and the gymnasium are to-day as important features of the school's equipment as are the classrooms and the laboratories. The social element and the zest of competition are probably necessary if physical exercise is to exert its most beneficial influences. As Joseph Lee has said, "From the adult standpoint, play is re-creation; from the child's standpoint, play is creation."

The life of the school as part of its curriculum. — What has just been said illustrates a principle that has rapidly gained recognition during the past two decades. It is not alone in books that the educational materials which we have been discussing are crystallized. The school itself is a product of civilization; it is in an outstanding fashion the type and symbol of the social heritage. The life that the school represents can be made to reflect in a very effective way some of the most precious elements of this heritage. The regimen of the school is in miniature the great lesson of law and order and system that it took the race milleniums of bitter experience to learn. In so far as the school life

clearly embodies and expresses equality of opportunity, justice, sympathy, kindliness, coöperation, and truth, it is doing much not only to keep these ideals alive and vigorous in each succeeding generation, but to insure their growth and their extension.

Questions, Exercises, and Problems

1. What constitutes culture? Should all people be cultured? What truth, if any, is there in the statement, "It takes nine generations to make a gentleman"? Are we using "culture" in the sense in which it is generally employed in ordinary conversation?

2. The three basic needs of life are often said to be "food, clothing, and shelter." How would each be provided were there no tools or machines?

3. Soap was formerly made in almost every household. How was it made? How is soap made now? Of what value is it to one who will never make soap to know how soap was formerly made or to know how soap is now made?

4. Trace the genesis of lighting houses and streets; of private and public water supplies; of weaving cloth; of baking bread.

5. Which of the basic practical arts have you had an opportunity to learn by first-hand experience? What, if any, would be the value of this experience, if we assume that you never practice the art in later life?

6. It has been said that "Modern industry tends to make of each man a mere shred of humanity." What does this mean? What are the evils involved in this condition? In what ways, if any, can education work to counteract these evils?

7. Why do farmers so often wish to "move to town"? Show how, in your judgment, each of these causes may be counterbalanced.

8. Why are practical farmers generally opposed to what they call "book farming"? What led a President of the United States to say that he had appointed "a real dirt farmer" to be Secretary of Agriculture?

9. "Misfit" is a term applied to persons who do not seem to succeed in the occupation in which they are engaged. Who is to

blame for these "misfits"? How can the school help to reduce the number of misfits?

10. "As civilization develops, the period of elementary education is necessarily lengthened." Explain the reasons for the preceding statement.

11. "Soap making was once a practical, empirical, rule-of-thumb art; now it is a science." Make other similar statements. Whence comes science? What is the service of science? Why is there such a decided movement toward a science of health just now?

(*Note.* — By this time, the students who are studying this book should have observed classes of children at work in schoolrooms and groups of children on the playground. The preceding chapters should be re-studied critically in the light of these observations.)

Suggested References

On the place of the practical arts in education, see:

F. G. Bonser — *The Elementary School Curriculum*, ch. ix. Macmillan, 1920.

F. G. Bonser and L. Mossman — *Industrial Arts for Elementary Schools*. Macmillan, 1923.

D. W. LaRue — *The Child's Mind and the Common Branches*, chs. xiv, xvii, xviii. Macmillan, 1924.

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Chapter VI

MIND AND ITS DEVELOPMENT

The problem of the chapter. — The three preceding chapters have dealt with the materials of education as these are crystallized in the subjects of study found in the schools. It has been pointed out that these materials represent the important results of the experience of the race and that a basic problem of education is to insure that the most significant results of race-experience shall become an integral part of the experience of each succeeding generation, — that they shall be woven into the experience of as many individual members of each generation as possible.

While this is a basic task of education, it does not tell the whole story. The reader will recall the distinction that was drawn in Chapter II between education as growth and education as vicarious experience. It is the latter point of view that was emphasized in Chapters III, IV, and V. It will be well now to return to the point of view represented by the conception of education as growth. We have this important question to ask and answer: In what ways will the mastery of these materials of education promote the growth or development of mind?

What is "mind"? — And first of all, we must make sure that our use of the term "mind" is clearly understood. This is another of those big, comprehensive

terms that are difficult to define in a satisfactory way. Here as elsewhere, a simple definition is almost certain to omit important elements that keep popping up to confuse us once we have accepted the definition. It is well, then, to work into the conception slowly and carefully, ever "mindful" of the fact that we are dealing with a very important term upon the precise meaning of which the keenest thinkers have been far from an agreement.

Mind as consciousness. — The notion of mind that has been most generally accepted is that which identifies mental life with consciousness. This identification at least gives us a starting point, for we all know some of the important differences between consciousness and unconsciousness, — between a conscious life and an unconscious existence. We know that we lose consciousness when we sink into a sound sleep, and that we recover consciousness when we become "wide awake." We know, also, that there are degrees of consciousness between these two extremes, — that sometimes we are "barely conscious" and sometimes we are "fully conscious." If this definition be accepted, it is clear that when one loses consciousness completely, one has in a very real sense lost one's mind.

Mind as a mirror of past experiences. — We can with some profit to our thinking carry this conception of mind a little further. When you awaken gradually from a sound sleep you become gradually "conscious" of your surroundings as these are "reported" by the sense-organs. Often this is a very fantastic consciousness which misinterprets the stimuli that the sensory nerves are sending inward, and this fantastic experience with its

grotesque misinterpretations we call a dream.[1] Often, however, you know that you are not dreaming, and yet you are uncertain and confused; you scarcely know where you are or even what or who you are. The sense-impressions are not misinterpreted as in a dream, but their meaning is obscure. Perhaps by what seems at the time an almost superhuman effort, you are able to "rouse" yourself, — to "snap" yourself into full consciousness. You know where you are. You recognize the different things that you see, — you know what they mean. Beyond this you know that *you are you;* the stage of *consciousness of self* has been reached.

Now this experience, which is familiar to all of us, may give us a suggestion of what consciousness or mind is in its most primitive form, and of what it comes to be in its later development. Whether all varieties of life have the attribute of consciousness is a disputed question, but its possession by, and its value to, the higher forms of animal life cannot be questioned. The higher animals *learn;* that is, they modify their behavior in the light of their past experience, and *to bring past experience to bear upon behavior is an incontestable function of mind or consciousness.* One might go farther and say with a large measure of truth that mind *is* the light of past experience brought to bear upon present conduct. This is obvious enough when you definitely remember past events and relate them to present problems. It is less obvious but no less true when there is no explicit recall of past events. When on waking from a sound sleep you "recognize"

[1] It is generally believed that dreams come only in light sleep, — that dream-life is a semi-conscious life so to speak.

the objects about you, you are interpreting your sense-impressions in the light of your experience. It may be only a fleeting "feeling of familiarity," but trifling and unimportant as it may seem, this feeling of familiarity is the root and basis of mental life. William James, in one of his famous epigrams, puts it in this way: "A polyp would be a conceptual thinker if a feeling of 'Hollo! Thingumbob again!' ever flitted through its mind. This sense of sameness is the very keel and backbone of our consciousness."[1]

Mind not only reflects the past; it also projects the future. — It is obvious that the usefulness of mind or consciousness would be restricted within narrow limits if all that it did were merely to reflect the past. As a matter of fact, in doing this it actually accomplishes much more. *It anticipates what is coming,* and this is an achievement that no mechanical device — not even a living automaton — could possibly parallel. "If . . . a hungry person sees a tempting morsel, his mouth waters, and his jaw tends to move at the same time that his hand goes out toward the food. The various reactions are set off simultaneously . . . as though the nervous system were rehearsing beforehand all the steps in the act of eating. The object is, so to speak, being grasped and eaten before it is touched."[2] If it is true, then, that mind reflects the past, it is no less true that it projects the future. Each moment of waking consciousness points ahead, — anticipates what is coming

[1] William James: *Psychology*, p. 240. Holt, 1892.

[2] B. H. Bode: *Fundamentals of Education*, pp. 213 f. Macmillan, 1921. Professor Bode (born 1873), is a well known student of the philosophy of education. He taught philosophy for many years in the Universities of Wisconsin and Illinois, and is now a member of the faculty of Ohio State University.

if only for the next succeeding instant of time. In the sense that it is always pointing toward something new, mind is *creative* as well as *reproductive*. Mental life — conscious life — is a continually changing life. When it ceases to change, the mental element tends to drop out, and behavior becomes mechanical. *Conscious* behavior, as Professor Bode says, is "essentially *experimental, forward-looking, controlled by the future*." [1]

What is mental development? — Still holding fast to these three notions of mind (*a.* that mind may be identified with consciousness, *b.* that it reflects the past, and *c.* that it projects the future), let us try to understand what is comprised under the term "mental development." There is manifestly a sharp contrast between the primitive and advanced forms of mental activity. Let us agree that the polyp, just barely competent to the discovery, "Hollo! Thingumbob again!" would have the glimmer of a mind. Something out of past experience has reappeared in a feeling of familiarity. Something in the immediate future has been foreshadowed, anticipated, projected. Just a tiny spark of that thing called intelligence has flashed out of the void. It is only a beginning, and probably for the polyp it would be also an ending, for it is altogether likely that the *first* animal forms to get as far as this made little further progress. There would be no clear image of the original experience — no distinct recollection of the first meeting with "Thingumbob." There would be no deliberate judgment to the effect that "I reacted so-and-so to Thingumbob the other day with a satisfactory result and shall

[1] B. H. Bode, *op. cit.*, p. 216.

therefore proceed to act in a similar way to-day, anticipating an equally satisfactory result." These diverse elements which a higher type of mind can detect in the total experience are unknown to the primitive mind. There is, we may safely assume, just a "feeling of awareness" fused with a glow that represents the satisfactory character of the earlier experience (or a shudder that reflects its painful character); and then an appropriate movement, at basis quite mechanical, but modified in some measure, — "conditioned" in some measure, — by this vague and fleeting consciousness.

A long road has been traversed from this first glimmer of mind to the searchlight beams with which an Einstein pierces the mysteries of interstellar space or a Millikan lays bare the secrets of electrons; but the essential character of mind and its unique function have not changed. Mind still builds upon the past and projects the future, and by so doing controls or directs conduct. But the *past* that is reflected by the highly evolved and highly trained human mind of to-day is not limited to the circumscribed personal experiences of the individual, nor yet to the experiences of his immediate fellows; as we have seen, it may comprise the outstanding and epochal experiences through which the race has passed. Furthermore, the *future* that such a mind projects is not limited to the next succeeding pulse-beat nor to the brief span during which the pangs of hunger or thirst or some other instinctive desire may remain unappeased. It may encompass days, weeks, and seasons through which effort is directed toward a remote goal; it may

plan for years ahead, for a lifetime of organized and directed work; it may even leap forward unerringly through long centuries, as when the astronomer predicts to the fraction of a second the time of the sun's eclipse ten thousand years hence. Nor is it individual *conduct* alone that is controlled and directed; for minds may think together and men may act together, and vast enterprises involving millions of men and extending over generations may be conceived and executed through coöperative thinking and collective action.

When we speak of mental development we refer to the gradual growth of mind from its faint beginnings to its vastly more complex and highly organized forms; from the fragments of crude experience which it first reflects to the wide range of tested, refined, and organized knowledge which may later form its substantial background; and from its feeble ability to pierce a little way into the future to its far-reaching power of setting up distant goals and of holding conduct to the achievement of these goals. The changes that this growth involves constitute the field of two related branches of the science of psychology, — (1) "genetic" psychology which deals with the growth of mind in the individual, and (2) "comparative" psychology which studies the behavior of lower animals as compared with that of higher animals and the behavior of primitive man as compared with that of civilized man, and through these comparisons attempts to learn how mind has developed in the race. In this book, it will not be possible to set forth in detail the conclusions that the students of genetic and comparative psychology have reached, but some of the

more important facts and hypotheses relating to mental development, and especially those that bear upon the problems of teaching and learning, will be referred to in this and the three following chapters.

Nature *versus* nurture in mental development. — As was pointed out in Chapter II, the growth of mind depends in part upon innate forces, and may be looked upon from this point of view as an *unfoldment* of natural tendencies that are present in an undeveloped form from the very outset of the individual's life. If by some miracle a newly born babe were separated at birth from all other human beings, and if means were devised whereby he could pass through the years of childhood and youth to maturity with no contact whatsoever with his kind, it is likely that there would still be a mental development of some sort. His nervous system would respond to the stimuli of his environment. Assuming that food and protection could in some way be provided in the earlier years, the experiences associated with the satisfaction of hunger and other bodily needs would give his mind a start on the road of growth. Some things no doubt he would learn for himself through either the fortunate or the unfortunate results of random movement or haphazard trial. How far he would get under such conditions can be only a matter of conjecture, but if we let our imaginations work a little on the problem we may perhaps gain some notion of the limited development that a purely "natural" education would bring about. The important point to emphasize, however, is this: that a certain part of mental development is due to the unfoldment of native capacities. The nervous

system, which is the physical basis of mental life, grows and develops just as other bodily organs grow and develop.

Two important corollaries follow from this fact. In the first place, if we know some of the laws governing this natural growth or unfoldment, we may be the better able to take advantage of these natural tendencies in the processes of teaching and learning. These possibilities will be discussed in the next chapter under the title, "Nature's Provisions for Learning." In the second place, if mental growth is conditioned by the natural growth of the nervous system, it is clear that nature may impose some rather definite limits on mental development. We know that mental development in the animals below the level of man is very narrowly limited. We shall also find that among human beings there are wide differences in the capacity for mental development. Not everyone by any means can acquire the rich background of knowledge or attain to the keen, penetrating vision of an Einstein or a Millikan; — not everyone, indeed, can even follow the trails that these men have blazed. Nature, then, not only helps us in the process of learning, but in a very real sense nature sets for each of us certain limits which, try as we may, we cannot transcend. These limitations of mental development will be the theme of Chapter VIII, "Adapting Materials to Individual Capacities." In the remainder of the present chapter we shall discuss briefly some of the forces which may be thought of as operating to promote mental development with the help of natural tendencies and within the limits set by nature.

The powerful influence of social pressures. — Granted an adequate basis in the nervous equipment of the individual, far and away the most powerful factor in the development of mind is a social organization which places its heaviest sanctions upon intelligence and mental alertness and imposes its heaviest penalties upon ignorance and mental sloth. Upon the degree in which the social organization exerts this influence depends in very large measure the mental development of the individuals that make up the social organization. Other things equal, the families that cherish most steadfastly the ideals of education and reflect in the home the most effective sanctions for mental effort are the families that produce the keenest and cleverest minds. Other things equal, the communities and states that provide most liberally for the education of their children are the communities and states that lead all others in prosperity and progress. Other things equal, the nations that in the past two or three generations laid the heaviest emphasis upon mass-education have to-day the highest rank on the scale of civilization. How far mental development will proceed toward the limits that nature has fixed will depend in almost every case upon the stimulation that the social environment provides.

"Stretching the mind." — What has just been said suggests at once that mind grows through effort, and that social pressures provide the most powerful stimulus to the necessary effort. There is probably a large measure of truth in this inference. It is something more than a figure of speech to say that mind grows through the "stretches" that it makes. The reader will recall the

emphasis laid in earlier chapters upon the need of *self*-activity in the learner, — upon the fact that it is the learner himself who must do the learning if anything of value is to be accomplished. Almost without exception, those who look back over their school days and evaluate their teachers give the first honors to the teachers who inspired them to the greatest effort. The "easy" teacher may be popular for the time being, but the teacher who combines sympathy with rigor gets the credit in the end. The conviction that one has grown mentally is strongest when one has reached out persistently to grasp a difficult conception, and has finally succeeded. One then feels that one's "grasp" has been enlarged and strengthened. In so far as that particular conception is concerned, this conviction that one has really "grown" has an unquestioned validity, although how far this increased strength will help in grasping other difficult conceptions is a matter upon which there is still a wide divergence of opinion.[1]

Imitation as a means of mental development. — The two preceding paragraphs have not only emphasized the importance of social pressures in stimulating mental growth; they also suggest that mental growth comes in part at least from following the lead that others have taken, from striving to learn the lessons that others have learned, — in short, from a process that may well be called "imitation." Viewed in a large way, a preponderant part of mental growth not only does come from this process but must of necessity come in this way. In how

[1] This is one of the questions involved in the age-old controversy over "formal discipline," — a topic which will be referred to only indirectly in this book, but which the student will meet frequently in his subsequent studies.

far the tendency to copy the pattern that our fellows (and particularly our elders) have set is instinctive or innate, and in how far it is an acquired trait, are questions that must be left for the following chapter; but there can be no reasonable doubt that mental growth in man not only gets its initial direction in this way but also depends throughout its course in a larger measure than most people perhaps would like to admit upon following the paths that others have made.

How imitation may serve to get learning started is illustrated by the following example. *M* as a baby was daily taken by her mother to the front door (which had a glass panel) as her father left the house. As the father reached the sidewalk he invariably turned to wave a good-bye, to which the mother as invariably responded. For some weeks *M* paid no attention to these performances. Finally the mother took *M*'s hand and waved it in response to the father's waving. This was continued for several days until quite without direction *M* took up the movement of her own accord. It is not at all probable that there was either choice or purpose in this action. It is likely that the visual impression produced by the retreating figure of the father simply became associated with the movement of waving the hand. A bond was established that sooner or later became associated with the natural affection of the child for the parent. It was a little step toward building in the child's mind an idea of the father and of what he meant in the life of the family.

The appearance of imitation in a child is, therefore, an important event in his mental development, for it is very largely through imitation that he takes on the qualities that are distinctively human. The child, by doing what adults do, develops into the human pattern. This development is limited by the copy, by the human environment. For the young child, this human environment is the home. The home environment is gradually

broadened by contacts with relatives and neighbors. Certain aspects of this widening environment affect the child and certain other aspects do not affect him. In general, however, the developing child under five years of age follows closely in his interests the generic interests of those who constitute his companions. Not without some measure of justification is the popular belief that the influences operating upon the child during these early years are formative in the highest degree.

With the advent of school life, new copies are set, and just as faithfully the child responds to them in the way of imitation. The pupils, the teacher, and the school studies begin to exert their influence — almost always in the order named as far as the intensity of the influence is concerned. Sometimes these factors work against each other, as when an unsympathetic teacher causes a negative reaction on the part of the child which may be readily transferred to the school subjects; or as when the "fashion" in the pupil-group is antagonistic to the teacher or to the studies. But the influence of imitation, be it positive or negative, is always there, and must always be reckoned with.

When a person leaves school and undertakes a bread-winning occupation, further mental development is likely to depend upon the demands that his social environment makes. If he casts his lot with a sluggish, unprogressive group, the chances are that he will stand still mentally or even deteriorate.[1] If by chance or

[1] This has been frequently the case with children of backward races who have been taken from their primitive homes and given school advantages in progressive communities, and who have then returned to their own people only to settle back into the standards that are exemplified all about them.

design he finds himself among alert and progressive people, he will almost inevitably respond in some measure to the stimulus that such an environment affords. As new ideas, standards, methods of living, and methods of work are adopted by the group, he will put forth effort to grasp their meaning and to mold his own life consistently with them. Thus his own mental growth is stimulated by the urge that he feels to imitate — to make himself like — those with whom he is associated.

Discovery, invention, and initiative: "creative intelligence." — If this tendency to imitate is so strong and pervasive, one may well ask how it is that progress of any sort is possible. The answer is that, while imitation is a powerful force, and while it fulfills a most important function in holding men together in working groups or societies, its influence may be profoundly modified in two ways.

(*a*) Even the child, while tending to copy the patterns that he finds reflected in his surroundings, is also certain to make for himself *discoveries*. Quite by accident, and without imitating anyone, he finds that a certain movement that he makes results satisfactorily, and thereafter he tends to repeat the movement and to build into his experience an element that to him is original — although millions of other children may have "hit upon" the same discovery. Further than this, the child in attempting to realize a keen wish or desire may deliberately plan a method that will enable him to reach the desired end, and this method may be for him an absolutely new *invention* — although, again, the same invention may have been made by countless other children. One who

watches children carefully will find innumerable examples of both discovery and invention; but because they usually concern what the adult considers trivial and unimportant things, little attention is paid to them.

The ability thus to depart in some measure from the pattern or copy that the race has set is called "initiative." Of late the term "creative intelligence" has become current with reference to the same trait, especially when applied to highly original instruments, plans, or proposals that have a profound effect on human life. Most of the men and women who are recognized by history as "great" owe their distinction to the fact that they conceived or created something that was both new and useful. It may have been the germ of a scientific principle, as when Galileo by a keen interpretation of the swinging chandeliers in the cathedral at Pisa laid the basis of the theory of gravitation which Newton later formulated into law. It may have been the initiation of a new machine for harnessing energy as when James Watt thought out and constructed the first practicable steam-engine. It may have been a new vision of social responsibility for the weak and erring, as when John Howard convinced the English people that the government of their prisons was inexcusably and unnecessarily brutal. But whatever it was, it has borne the unmistakable hallmark of originality and initiative. One may perhaps achieve a certain measure of temporary recognition by reaction and destructive criticism; sometimes, indeed, the conservative may discharge a very useful function by checking new movements until they have demonstrated their worth; but it still remains true that the world's gratitude through the

ages goes, not to the "stand-patter," but to the innovator, the reformer, the discoverer, the inventor, the creator.

The important factor in human progress, then, is the *new idea*, the putting together of past experiences in new ways. The result is sometimes crystallized in material things, in useful objects, utensils, and machines. From stylus and quill to fountain-pen and typewriter; from the sickle, the scythe, and the cradle to the mowing machine, the self-binder, and the harvester; from the hand-lever printing press to the cylinder press; from the oxcart to the automobile: there is a clear sequence of new ideas, each carrying with it some increment of improvement in man's control over his environment. In the realm of human relationships, the same kind of progress is observable. All social institutions are at basis inventions, and their gradual improvement and adaptation to human needs have been marked by the gradual accumulation and acceptance of new ideas. The home is an invention, and the fine relationships expressed in respect for age and respect for womanhood have had a long and tortuous evolution. The church; the state; civil society; our modes of salutation; the clothes we wear; the fashions, modes, and styles of clothes; the system of describing lands and the modes of conveying them; our music and art; our law; and our systems of education: all these are inventions which have been wrought by human minds — most of them during the few thousand years that have elapsed since the end of the Old Stone Age. Above all and beyond all, our methods of thinking are inventions, and the ideal of progress was itself a discovery!

(*b*) Man, then, is not exclusively an imitating animal; his mind has constructive and creative abilities which have already demonstrated their power in countless ways. The distinctively human type of progress, which depends upon new ideas, has seemed slow and halting. The heavy hand of tradition, imitation, and conservatism has seemed to hold men back, and in a certain sense it has retarded and still retards human progress.[1] It is easy to become depressed and discouraged by the slowness of progress, and to reach the pessimistic conclusion that the human race is incorrigible. The briefest study of the history of civilization would seem to suggest a far more hopeful conclusion. Progress must of necessity seem slow when viewed "close up." But when one sees happenings in a due perspective, the situation is entirely altered. A full generation separated Galileo from Newton. Forty-six years elapsed between the granting of the patent to Watt for the first practicable steam engine and the operation of the first successful locomotive by Stephenson. The American nation was in existence for nearly three quarters of a century before all white men could vote; another decade elapsed before the restrictions of the suffrage relative to color and race were removed; while the enfranchisement of women had to wait more than half a century longer.

[1] We can study the operation of this factor to-day in one of the most remarkable phenomena of history: the failure of civilized peoples to put an end to warfare even after a most stupendous and costly world conflict which was prosecuted in part to achieve this very end. And yet one cannot doubt that the great masses of people in all civilized countries sincerely desire to see the peril of warfare ended for all time. Even though it may be true that selfish and self-seeking groups contribute gladly to the confused thinking which now impedes the solution of the problem, it is equally true that thousands of men and women whose motives could never be questioned, — who have nothing to gain and would scorn to gain from war, — are uncertain and bewildered. They cannot see clearly how the adjustment can be made between nationalism and a thoroughgoing international unity.

The essentially hopeful and encouraging fact is that human progress, slow at first, has increased its momentum until to-day a single decade witnesses changes more profound and advances more notable than generations or even millenniums accomplished with primitive man. This acceleration has been due to a variety of factors, to some of which we have already referred.[1] Among the most important has been the gradual coming to self-consciousness of the *ideal* of progress itself. This seems, indeed, to be the fortunate solution of the apparent inconsistency between imitation and initiative. In the modern world, *initiative, invention, change, discovery, and progress have been given a pervasive social sanction.* They constitute the new "pattern" which society sets. Thus, even if it be true that most men are conservative by nature (a conclusion which has yet to be established), it is also true that one of the ideals now most sedulously "conserved" is the ideal of progress, the ideal of change.

Invention and genius. — It is usually believed that human progress owes its impetus to persons of unusual native gifts. The following quotation puts this point of view clearly:

> "The human mind has been built up through hundreds of thousands of years by gradual accretions and laborious accumulations. Man started at a cultural zero and had to find out everything for himself; or rather a very small number of peculiarly restless and adventurous spirits did the work. The great mass of humanity has never had anything to do with the increase of intelligence except to act as its medium of transfusion and perpetuation. Creative intelligence is confined to the very few, but the many can thoughtlessly avail themselves of the more obvious

[1] See Chapter III.

achievements of those who are highly endowed. Even an ape will fit himself into a civilized environment. A chimpanzee can be taught to relish bicycles, roller-skates, and cigarets which he could never have devised, cannot understand, and could not reproduce. Even so with mankind. Most of us could not have devised, do not understand, and consequently could not reproduce any of the everyday conveniences and luxuries which surround us. Few of us could make an electric light, or write a good novel to read by it, or paint a picture for it to shine upon.

"... So history, *namely change*, has been mainly due to a small number of 'seers,' — really gropers and monkeyers — whose native curiosity outran that of their fellows and led them to escape here and there from the sanctified blindness of their time.

"The seer is simply an example of a *variation* biologically, such as occurs in all species of living things, both animal and vegetable. . . ." [1]

This explanation which attributes human progress almost entirely to the production of variations from the usual human type, — to the fortunate appearance of "natural" geniuses, — found its most substantial advocate in a man who himself ranks as one of the outstanding figures in the history of modern science, — Sir Francis Galton.[2] In 1869 Galton published a remarkable book, *Hereditary Genius*, in which he set forth an abundance of evidence tending to show that the unusual ability which is recognized as genius is due not so much to environment and training as to biological variation and physical heredity. The plausibility of this evidence has led many people to infer that the only sure and cer-

[1] J. H. Robinson: *The Mind in the Making*, pp. 79 f. Harper, 1921.

[2] Francis Galton was born in 1822 and died in 1911. In addition to his important work in the scientific study of mental heredity, he was one of the pioneers in applying mathematics to social and psychological problems, and he laid many of the bases of the present-day science of statistics. He was a cousin of Charles Darwin.

tain way to promote human progress is through a process of selection parallel to that which the stockbreeder practices in producing better strains or varieties of domestic animals. This proposal is known as the doctrine of "eugenics," a term that Galton himself was the first to use.

A lively controversy has grown up with regard to the validity of this general theory, — the battle between the "hereditarian" and the "environmentalist," the former following Galton in ascribing the preponderant influence to heredity ("nature") and consequently laying a heavy emphasis upon eugenics as a social policy, the latter ascribing the preponderant influence to environment ("nurture") and consequently urging the claims of education and training.

We shall come more closely in touch with this question (the answer to which is obviously of basic importance to education) in a later chapter.[1] In the present chapter, we are interested in it only as it affects the problem of mental development. Even granting that the forward pushes are given by those who owe their strength to inherent or native abilities, — even granting that "creative intelligence is confined to the very few," — does it follow that the many merely "thoughtlessly avail themselves of the more obvious achievements of those who are highly endowed"? Or is it true that, in using and profiting by the advances that genius initiates, the "common man" rises somewhat toward the level that genius has attained?

An affirmative answer to the latter question is dis-

[1] See Chapter VIII.

tinctly justified if the conception of mental development that we have sketched in this chapter is at all valid. There seem, indeed, to be two modes of mental development: one imitative, causing the individual to follow in the general path that someone else has blazed and yet to surmount, each in his own way, the obstacles that beset his progress; the other, original, creative, impelling the individual to make new discoveries and inventions, and to solve new problems; but both representing real mental growth. It is well to emphasize as Professor Robinson has done in his book, *Mind in the Making*, the vital significance of "creative" intelligence. It would be a grave error to infer from this emphasis that the other way of mental development — the way that follows rather than leads — is neither true mental development nor essential to human progress. Two important matters may be briefly referred to in this connection.

(*a*) Impressed by the importance of developing initiative and originality, many persons have jumped to the conclusion that a faithful and systematic study of what others have worked out in some way confines or even crushes one's own original tendencies. It is an easy step from this to what is virtually a discrediting of knowledge or race-experience in the work of education. One frequently hears the phrases "mere knowledge," "book-learning," and the like spoken in a contemptuous tone; and while it is right to condemn the attitude that looks upon knowledge merely as an ornament, — merely as a means of separating the "cultured" from the "crowd," — it is very easy to carry this condemnation so far as to cast suspicion upon the kind of learning that

earnestly and sincerely attempts to master what the race has learned. Far from being inconsistent with initiative and originality, such a mastery, as Professor Thorndike[1] has clearly pointed out,[2] is essential to the highest and most useful forms of creative and constructive effort.

(*b*) While it would be difficult to overestimate the services that have been rendered by men and women of genius, it would be just as unfortunate not to recognize that contributions to progress depend very largely upon the level that has already been attained, not alone or chiefly by the leaders that have preceded, but also and more fundamentally by the great masses. The message of Lincoln would have fallen on deaf ears had not the people to whom he appealed reached a point of mental development where they could understand and appreciate what he had to say. More than that, lesser men did much to prepare the way for Lincoln, — Garrison who was persecuted for his opinions, and Lovejoy who was murdered by a mob, and John Brown who was executed for treason. All this does not detract from Lincoln's enduring personal contribution to human progress, but it does serve to illustrate the fact that many men and many minds work together to insure almost every forward movement of civilization, and that the tendency to ascribe progress solely to the efforts of unusually gifted men and women needs some measure of correction.

[1] Edward Lee Thorndike (born 1874) has probably done more than any other person to promote the scientific study of educational problems. His work in the refinement of statistical methods as applied to these problems is especially notable. For a quarter of a century he has been professor of educational psychology in Teachers College, Columbia University.

[2] In an article, "Education for Initiative and Originality," in *Teachers College Record*, November, 1916.

Speaking of the "law of continuity" in history, Professor E. P. Cheyney makes this significant statement:

> "In popular belief Alfred founded Oxford, Luther began the Reformation, Gutenberg invented printing, Jefferson wrote the Declaration of Independence, the Kaiser started the Great War; yet none of these statements satisfies the thoughtful historian. Actual origins elude us; everything is the outcome of something preceding; the immediate, sudden appearance of something, its creation by an individual or a group at one moment in time, is unknown in history." [1]

Encouraging initiative and invention in children. — It is safe to say that the extent to which most children will manifest an inventive disposition depends largely upon the necessity which is felt by them to realize through their own constructive effort some desire that they keenly feel. In too many cases, undoubtedly, so much is done for children that the need of independent and original effort does not constitute a real "urge." Educational theory and practice have long recognized this fact, and many of the teaching-methods that are now recognized as "good practice" are built upon the theory that opportunity and stimulus must be provided for the independent activity of the learner.

A father took his seven-year-old son to the woods one afternoon. The boy became thirsty just as they arrived at a spring of water. They had no cup and the problem was to find a way of getting a drink. The boy suggested that he could lie down and drink; the father objected that he would get muddy and wet. The boy then proposed that he could make a cup of his two hands. The father

[1] E. P. Cheyney: "Law in History" (Presidential address before the American Historical Association, December, 1923), *American Historical Review*, January, 1924, p. 237.

said that there was a better way. The boy apparently did not see it; so the father said that there was something not very far away out of which a serviceable drinking-cup could be made. The hint was sufficient and the boy gathered some large leaves for the purpose. The father suggested that there was a still better cup to be had, and that the thing out of which the cup could be made was in his pocket. The pocket was emptied and the boy quickly selected an envelope out of which to make his cup.

The usual procedure would have been for the father to say, taking the envelope from his pocket, "I will make a cup for you." As it was, the boy's own initiative was stimulated in at least a slight degree. His wits were challenged, and he responded.

Which is the better procedure? The answer depends in part on the aim that we have in view. If supplying the child with a drink by the shortest possible method is the end sought, then the father may well do all the thinking and deliver the drink to the child. If, on the contrary, the end sought is the development of the child's ability to use his knowledge and experience in solving a new problem, — in other words, to stimulate him to mental growth, — then the method described has plausible advantages.

The school cannot go through life with the child to see that the knowledge which he acquires is used as it should be used, but the school can foster a constructive attitude toward what it teaches by having the learner re-invent and re-discover some of the simpler elements among the materials with which it deals. The school can also with demonstrated profit base some of its instruction on the problems and purposes that appeal to the learner as well worth solving or realizing, and thus convince him that the materials that he is expected to master have a real value. The more important types of teaching that have been developed to meet these conditions will be discussed in Chapter IX. What we have to emphasize here is that the modern school is far from

blind to the importance of stimulating initiative and originality as modes of mental growth.

Insuring an appreciation of what progress has cost. — Even where it is impossible or impracticable to have the learner work out for himself the lessons that it is necessary for him to learn, it is often possible and always profitable to see to it that he appreciates the heritage that is placed at his disposal. Professor Robinson's statement that "the many can *thoughtlessly* avail themselves of the more obvious achievements of those who are highly endowed" [1] points to a real need in education. One may merely "catch on" to the "how" of machines and to the proper procedures in social life by following the copy in a passively imitative way, and fail to catch even a glimmer of their meaning and to sense what they have cost.[2] We all tend to take for granted the utensils and amenities of civilized life. Not infrequently we take an absurdly unjustified pride in their possession. With regard to these products of human thought and ingenuity and effort we are very much like the person of whom Wordsworth wrote:

> "A primrose by the river's brim
> A yellow primrose was to him,
> And it was nothing more."

To retrace with the learner, then, some of the important steps in the development of the materials that he will master — to show how these have been slowly and often laboriously wrought and refined from human

[1] J. H. Robinson, *op. cit.*, p. 79 (italics ours).
[2] Recall the discussion of the liberalizing possibilities of the practical arts in Chapter V.

experience — is likely to do something toward giving him an understanding of the way in which great minds have worked, as well as a sense of his indebtedness to those who have smoothed the path for him, and a keen desire on his part to pass on the heritage not only undiminished by his neglect, but enlarged by his own creative efforts.

The scientific method as a means of realizing the ideal of progress. — We said a few pages back that modern civilization differs from its predecessors in placing a powerful social sanction upon change and progress, — that it has made progress itself a conscious ideal. This emphasis has gone hand in hand with the development of a method by which progress, instead of depending chiefly either upon chance discoveries or upon the inventions of a few gifted persons, can be insured on a wide scale and in a systematic and continuous fashion through the efforts of large numbers of men and women who, though they may fall short of "genius," are nevertheless thoroughly competent to comprehend and apply a developed technique of promoting progress. This technique is known as the "scientific method." Its gradual refinement has been a most important phase of mental development in the race; its effective mastery by a large number of persons in each generation will be an important factor in continued progress; but the surest guarantee of continued progress is to make certain that everyone have an appreciative understanding of this method. As was pointed out in Chapter IV, this is one of the problems of the universal school that have so far been least satisfactorily solved.

The essential characteristics of the scientific method. — The scientific method can be formulated in simple terms, but such a formulation, like the simple definitions of other large and comprehensive terms that we have discussed, is likely to be misleading. It is true that the scientific method usually involves (*a*) a definite problem to be solved; (*b*) a most careful and unprejudiced observation of the "facts" in the case; (*c*) the framing of a provisional theory or hypothesis regarding the solution of the problem; (*d*) the careful testing and re-testing of this hypothesis, if possible under conditions in which every factor operating can be controlled, and its influence determined by accurate measurement (see pp. 65f.); and (*e*) the formulation of a final conclusion only after one is certain that all possible influences have been accounted for. While all of these steps are likely to be reflected in every piece of really scientific work, the problems in the various fields of scientific inquiry are so diverse and present so many different kinds of difficulty that it is extremely difficult to make this or any other general formula fit every item of scientific procedure in a single field.

From the point of view of general education, however, the important task is not to give to every person skill in the application of the scientific method, for these skills are very highly specialized, — so highly specialized, indeed, that a single individual, however highly gifted, can scarcely hope to be a master of the special technique of investigation in more than one narrow field. The important task is to insure, through a study of typical illustrations of the scientific method, an understanding

of the general procedure and above all a keen appreciation of what the spirit of science is and what it has accomplished.

Moral and aesthetic development as significant phases of mental development. — The development of mind as sketched in the preceding pages may appear to the reader to have laid undue emphasis upon what may be called "intellectual" development to the neglect of "moral" and "aesthetic" development. The three-fold division of mental functions under the terms "knowing," "feeling," and "willing," although not recognized by modern psychology, still has a certain validity. Education must always face squarely the problems of "educating the will" ("moral" development) and "educating the feelings" ("aesthetic" development), as well as the problem of "educating the intellect." In so far as a recognition of the three functions, — knowing, feeling, and willing, — will keep us from neglecting moral and aesthetic development, we should still retain the distinctions that these three terms imply. On the other hand, it is important that we do not let these useful terms lead us to the conclusion that knowing, feeling, and willing are even relatively independent of each other in the actual working of the human mind. In the present chapter and in the preceding chapters, we have had much to say about the "knowing" side of mind, but it will be recalled that we have also emphasized at every point the primary function of "knowing," — namely an improved control of conduct or behavior. Thus "intellectual" education in our treatment turns out to be, in a very real sense, "moral" education. We have also referred

repeatedly to *appreciation* as a most significant phase or outcome of learning, and appreciation is essentially a matter of *feeling*. To insure a growing appreciation of what is beautiful and true and good in the world about us is precisely what most people mean by "educating the feelings," while to insure especially the growing appreciation of the beautiful is the specific problem of "aesthetic education."

Some persistent problems of moral education. — While it is true that *all* education which is consciously directed toward the improvement of conduct is, in the last analysis, moral education, there are certain specific problems of moral education that must be given a separate and a somewhat independent recognition because of their basic significance to social life. Generally speaking, the phases of mental development that have been traced in this chapter have been marked by what all would agree to be moral progress. As the human mind has gradually improved its control over its environment, — as it has increased its capital of experience or knowledge and its power of projecting itself into the future, — it has also become more tolerant, more humane, more sympathetic, more willing to sacrifice for others. Out of its accumulation of experience, it has wrought not only knowledge in the narrower sense of the term, but also ideals and standards of conduct that are essentially moral in their nature and significance; and these constitute a most important part of the heritage that is placed in the hands of the teacher to transmit "unimpaired and with some increment of meaning" to each succeeding generation.

This responsibility of the teacher is of especial impor-

tance in an age of change and progress. The very ideal of progress that we have just been discussing is making it continually easier to discard, not only old machinery and utensils, not only old ways of working and living, but also old ideals and standards in the field of morals. In connection with these ideals and standards, a peculiar factor operates that does not appear at all in connection with other things that may be discarded. Moral standards have been evolved through the ages as means of holding in leash individual desires and impulses that cannot be gratified indiscriminately without grave danger to the social structure. The temptation to give them up is consequently stronger as a rule than is the temptation to give up other things; hence the responsibility to keep them as vital controlling forces in each generation rests with increasing weight upon education.

Beyond this, there is another factor that is operating to increase the school's responsibility for moral education. These standards and ideals have been strongly fortified in the past by religion. The code of moral law that is represented by the Ten Commandments, for example, has had a far-reaching force and effectiveness because of its religious setting. Many people believe that the influence of religion has been declining in modern civilization, and whether this be true or false, there is no doubt that the idea of eternal punishment (which, whether we like to admit it or not, gave a powerful sanction to the moral law) has lost much of its force. The school, then, must devise some means by which the moral controls can be made effective, and in our country the school must do this without recourse to the most powerful sanctions

which have been the mainstays of the moral standards in the past.[1] We shall revert to this very significant problem in Chapter IX, "The Outcomes of Teaching and Learning."

Summary. — This chapter has considered mind as consciousness, and has thought of the development of mind as the development of a conscious control over conduct or behavior. It has recognized that consciousness not only mirrors past experience and interprets present situations in the light of past experience, but also anticipates the future, projects itself into the future. The development of mind in all of these directions is due in part to an unfoldment of natural tendencies, but it is also due to an infoldment of experiences. The enlargement of the capital of experience or knowledge upon which

[1] There are wide differences of opinion as to whether moral progress is now keeping pace with material and intellectual progress. There are numerous expressions of a pessimistic and even a despairing attitude, but many of these are based upon an uncritical observation of conditions that are probably neither fundamental nor permanent. The older members of each generation are likely to "view with alarm" the standards and the conduct of the younger members. This phenomenon is as old as history, and need not disturb us unduly. On the other hand, history very clearly teaches that every period of rapid progress involves very serious dangers of moral deterioration; every pronounced change in the conditions of social life involves new moral perils; and inasmuch as the present age is distinctly one of profound social readjustments, these perils must be reckoned with to-day. It is particularly noteworthy that, in spite of our recent progress in many phases of civilization, there has been a notable absence of progress in some things that are unquestionably fundamental. Science and education, working together, have succeeded marvelously well in increasing the average life-span by reducing the danger of death from disease. Science and education are now working together with already demonstrated success to reduce the hazard of death from accidents. (This is the movement known as "safety education.") But in our country the risk of violent death by murder has shown no tendency to diminish during the generation that has witnessed such marked progress in other directions. Our national "homicide record" is not only a national scandal; it is a scandal that so far shows no signs of abatement. The homicide record, however, from our point of view is not nearly so significant in itself as it is when one regards it as a general index of the situation that exists regarding serious crime and the respect that the masses of the people have for the rights and welfare of others, — in short, the "respect for law." This seems to be a problem that education has not yet satisfactorily solved.

mind works, and the increase in its power to interpret and predict, are due largely to the demands that its environment makes upon it. Generally speaking, mind grows through its new efforts, — through the "stretches" that it makes to "grasp" larger and larger meanings, — but whether it will put forth the effort depends usually upon pressure of some sort, and most frequently upon social pressure. The direction that mental growth will take is ordinarily determined by the patterns or copies that the social environment provides; hence imitation is a fundamental mode of mental development. But mind may also grow through its own initiative; as well as appropriating the discoveries and inventions that others have made, it may itself discover and invent. Unusual ability to initiate, discover, and invent is the characteristic of genius, but all normal minds have this capacity to some extent. Present-day civilization places a heavier premium upon initiative and its products than did any of the earlier civilizations;[1] change and progress now constitute in themselves a pattern or copy that society sets for the individual to imitate.

While true mental development includes the development of moral ideals and standards and of aesthetic tastes as well as the development of the intellect, and while mind operates as a unit and not as a combination of separate "faculties" (such as knowing, feeling, and willing), it is well to recognize that moral education and aesthetic education are problems that the school cannot neglect, and that moral education is especially important in an age that is marked by profound social changes.

[1] With the possible exception of Greek civilization.

Questions, Exercises, and Problems

1. Note in your own experience the differences between semi-consciousness when you are just falling asleep or gradually awakening from sleep and the full consciousness of waking life.

2. Imagine an entirely uneducated adult in your classroom. How would his consciousness of his surroundings differ from yours? Imagine a primitive savage in your dining room. What would he "make of" the furniture, the dishes, the silverware, the habits and manners of the diners?

3. Note the way in which even the immediate recognition of the objects about you reflects your past experience. Compare this immediate recognition with the experience of searching in your memory for definite past events with which to identify the objects. Watch for occasions when you have a vague feeling of familiarity which you try to make definite by explicitly recalling a past event; (this frequently happens in meeting people whom you have met before but whom you cannot quite "locate").

4. Consider each of the studies that you have pursued during the present year, and list for each the principal ideas acquaintance with which has seemed to promote your own mental growth. Which of these have been hardest to "grasp"? Which do you regard as the "biggest" ideas, and what is your basis for judging the "size" of an idea?

5. In the study of geometry in the high school, you doubtless had two kinds of exercises: in some cases you studied the demonstration of certain theorems as these had been worked out by the author of the textbook; in other cases, the theorem was simply stated and you were directed to work out the demonstration. Do you feel that you achieved any "mental growth" from the former? If so, did it differ in any way from whatever mental growth you may have gained from the latter?

6. Describe any school experiences that you may have had which seem to you to have developed your "initiative." What methods of teaching did these experiences usually involve? What phases of your school work do you think operated to stunt or kill your initiative and originality?

7. Study your classmates and identify those that seem to be the most original. How do these students rank with respect to their mastery of knowledge or "scholarship"?

8. Observe in an elementary-school classroom the ways in which the teacher definitely attempts to insure mental growth on the part of the pupils through (*a*) encouraging them to "stretch" their minds, (*b*) getting them acquainted gradually with ideas of increasing difficulty, (*c*) encouraging them to initiate, discover, and invent. Note opportunities for such stimulation that the teacher may have overlooked.

9. Study the work of an elementary-school classroom to determine what specific steps the teacher takes that could be classified as "moral education." As "aesthetic education."

Suggested References

W. James — *Talks to Teachers*, chs. i, ii, iii. Holt, 1900.

J. H. Robinson — *The Mind in the Making*, pp. 34–62. Harper, 1921.

On the meaning and significance of the scientific method, we recommend especially a little book in the *How to Study* series:

F. Sanford — *How to Study: Illustrated through Physics.* Macmillan, 1922.

Chapter VII

NATURE'S PROVISIONS FOR LEARNING

Man a "learning animal." — In the preceding chapter it was pointed out that mental development is due in part to inborn tendencies that are just as much a part of man's nature as are the inborn tendencies that determine his physical growth. Further than this those phases of mental development that are not in themselves inborn are based in the final analysis upon native or inborn tendencies. Nature has done much to make man distinctively a *learning* animal. Man himself has been able to work out his human destiny because he has been able to avail himself of the experiences of those who have gone before, but this very ability rests upon certain important natural or "unlearned" traits and tendencies. The present chapter will discuss some of the more important features of this natural equipment which makes both civilization and education possible.

Important Differences Between Man and the Lower Animals

1. The lengthened period of infancy. — Most of the lower animals come into the world fairly well equipped for maintaining themselves in the struggle for life. Many of the very low forms are practically "mature" from the outset; that is, they can at once move about, find their own food, combat their enemies, and propagate their

species. As animals increase in complexity of organization, however, they tend to bring forth *immature* offspring; in these cases, the young must pass through a certain "period of *infancy*" during which they are cared for by their parents; at the outset they are relatively helpless. In no other species of animal life are the offspring so helpless and dependent at the beginning as is the human infant; in no other species is the period of immaturity, — the "period of infancy," — so long in proportion to the total life-span as in the case of man.

Prolonged immaturity means plasticity and necessity for guidance. — This helplessness, however, turns out in the end to be one of the very great advantages of humankind. The very fact that the nerve-connections which control behavior are for the most part incomplete at birth makes possible a far-reaching *plasticity* of behavior as contrasted with the relatively *fixed and unchangeable* behavior to which most of the lower animals are limited, and which even the highest of the animal orders below man cannot far transcend. In general, the more numerous and precise the definite movements possible when the animal first comes into the world, the fewer will be the possibilities of learning. In general, the greater the *need for adult care, control, and guidance* during the period of immaturity, the more numerous are the ultimate chances of progress. One writer has set forth the essential contrasts as follows:

> "Every child is born destitute of things possessed in manhood which distinguish him from the lower animals. Of all industries he is artless; of all institutions he is lawless; of all languages he is speechless; of all philosophies he is opinionless; of all reasoning

he is thoughtless; but arts, institutions, languages, opinions, and mentations he acquires as years go by from childhood to manhood. In all of these respects the new-born babe is hardly the peer of the new born beast; but, as the years pass, ever and ever he exhibits his superiority in all the great classes of activities until the distance by which he is separated from the brute is so great that his realm of existence is in another kingdom of nature." [1]

This relationship between the lengthened "period of infancy" in the human species and man's progress in civilization was suggested more than two thousand years ago by some of the keen Greek philosophers, but its fundamental significance was not clearly pointed out until the marked difference as well as the clear resemblances between man and the lower animals became a serious subject of study following the epoch-making investigations of Charles Darwin in the second quarter of the nineteenth century. John Fiske[2] deserves the chief credit for setting forth this illuminating principle.

2. "Social heredity" as a distinctively human prerogative. — The lengthened period of infancy in the human species is important primarily because it enables man to transmit to his offspring the products of his own experience and of the experience of his predecessors. The child acquires these products in part through unguided imitation and in part from the conscious and deliberate instruction and training provided by adults.

[1] J. W. Powell, quoted by A. F. Chamberlain: *The Child*, p. 1. London, 1900.

[2] John Fiske (1842–1901) was an American scholar who did much to popularize the philosophy of evolution as set forth especially by Herbert Spencer. In doing this, he added to the Spencerian teachings certain theories of his own, by far the most important of which was his interpretation of the period of human infancy. Fiske also wrote extensively in the field of American history.

These processes of transmission are often referred to as "social heredity" in contrast with "physical heredity," the latter term covering the transmission of traits or characteristics through the germ-cells. Man shares with the lower animals the power to transmit his characteristics by physical heredity, but he alone possesses in a significant measure the added advantage of transmission through social heredity.

"Acquired characters" probably not transmitted by physical heredity. — It is now a fairly well established principle that definite changes or modifications in the structure of an animal which come about during its individual lifetime because of the action of outside or "environmental" forces are not transmitted to the offspring through physical heredity. For example, if a man has had an arm amputated in early life, his children will not be born "one-armed." Nor will the bonds that experience establishes in the nervous system be transmitted through the germ-cells. A man may laboriously acquire skills of one sort or another; these mean the formation and fixation of certain definite connections in the nerve-substance; but the children of this man will not be born with these fixed connections; if the children are to "inherit" the same skills, it is social heredity, and not physical heredity that must be depended upon.[1] Many of the lower animals are changed or modified by environmental forces during their lives; some of them may

[1] Recent investigations by I. P. Pawlow (see *Science*, vol. lviii, 1923, pp. 359 ff.) suggest that the time and effort required to learn an art may be reduced as successive generations acquire and practice the art. If substantiated, this hypothesis will be of great significance to educational theory. This does not mean, however, that definite modifications due to learning are transmitted through physical heredity.

even learn fairly complicated skills; but these skills, like those that man acquires, cannot be transmitted to the offspring by physical heredity; and, unlike man, the lower animals have no ready channels of "social heredity" through which these gains can be passed on by the adults of each generation to the young of the next.

Physical heredity vs. *social heredity.* — As a result of these limitations, progress in the lower animal orders is very slow and very gradual; only "germinal" *variations* of a type that can be transmitted through biological reproduction will result in permanent changes, and it is always problematical whether these germinal variations will be in the direction of progress. Man, on the other hand, can transmit his successful *modifications* through social heredity, and thus accumulate from generation to generation the elements that make for progress. As we have seen, this process of accumulation takes what we consider a long time, but compared with the long generations that progress through germinal variation requires, the time is relatively very short.

Organic vs. *social evolution.* — The contrast between physical heredity and social heredity is often referred to as a contrast between two distinct types of evolution: (*a*) *organic* evolution, which depends upon the appearance of germinal variations and their perpetuation by physical heredity; and (*b*) *social* or *human* evolution, which depends upon the appearance of modifications and their perpetuation by social heredity. By the same token, the products of human experience which are thus transmitted by social heredity are often spoken of as the "social heritage," the "human heritage," or the "cul-

ture-heritage," to distinguish them from the physical or biological heritage.

3. The highly organized instincts of the lower animals as contrasted with the "innate tendencies" of man. — The lengthened period of infancy helps us to explain still another important difference between man and the lower animals. It was said above (p. 162) that many of the lower animals almost from the outset can move about, find their own food, combat their enemies, and propagate their species. This means that they come into the world with nerve-connections already fixed which enable them to carry out complex acts without going through a period of training or learning. These inborn connections are the physiological basis of what the psychologist calls "instincts." For our purposes an instinct may be defined as a relatively complex type of behavior for which fixed and definite nerve-connections are provided by physical heredity.

The behavior of most of the animals below man is almost entirely governed by these inherited "controls," and, as we have seen, this behavior tends to remain relatively unchanged from generation to generation. The human infant, on the other hand, has very few of these definite and perfected nerve-connections fixed at birth. He can breathe and take food and cry; but he cannot control to any marked extent the movements of the trunk and limbs. This is one of the disadvantages of being born a human being, but, as we have also seen, this temporary disadvantage is offset in an overwhelming measure by the advantage of plasticity; not being burdened with fixed and unchangeable modes of behavior,

the human infant is in a position to learn or acquire the modes of behavior that meet best the conditions under which he will live.

Instincts and innate tendencies. — There has been a lively controversy among psychologists as to whether the human infant possesses more or fewer instincts than do the lower animals. If we define an instinct as a complex type of behavior for which fixed and definite nerve-connections are provided by physical heredity, it is clear that the instinctive equipment of the human infant is very meager indeed; but if we were to conclude that the human infant has few inborn *tendencies* to act in somewhat definite ways we should probably be mistaken. For this reason it is well to distinguish between the fixed and definite *instincts* of the lower animals, and the innate (or inborn or instinctive) *tendencies* of man. The latter are just as much the product of physical heredity as are the former, but they differ in being less definite and much more amenable to modification. We can explain this by reference to the lengthened period of infancy. In all probability, the very remote ancestors of man had full-fledged instincts comparable with those of the lower animals. As infancy became prolonged, it may well have come about that the human offspring came into the world with fewer and fewer of the nerve-connections firmly fixed. With most of these connections it is probable that only the initial stages of development are perfected at birth. Most of the instincts have become, as it were, "truncated." Something innate is there, but it expresses itself as a *tendency* and not as a perfected movement.

The Innate Tendencies that are Particularly Significant in Teaching and Learning

The innate sources of motives. — These innate "tendencies to act" manifest themselves chiefly in the form of strong impulses or desires which are of the very greatest importance in human life because they probably constitute the basic sources of human "motives." They are, indeed, powerful "moving" forces impelling the individual to certain types of action. Thus the fighting *instinct*, which in the lower animals expresses itself in definite and characteristic movements, becomes in man the fighting *impulse*, not at first (or natively) highly organized on the side of movement, but "impelling" or "driving" the individual either to make many movements some of which may be successful and consequently repeated until the nerve-connections have become well fixed, or to imitate successful movements that others make in like situations. The important point, however, is that the primitive, age-old feelings, emotions, and passions still persist, although, because of the plasticity of the human nerve-connections, they do not often express themselves in fixed, unchangeable, and characteristic movement-types.

From the point of view of teaching and learning certain innate tendencies or impulses are of very great importance because they constitute nature's provision for getting the learning process started. Among the most important of these tendencies are the following:

The play impulse. — This is characteristic of the young of all animals that are born immature but es-

pecially is it characteristic of the human offspring. The tendency to pick up and practice in playful activity the modes of behavior that may be useful in later life is one way in which the plasticity of infancy or immaturity is expressed. The inherited factor here is probably the general impulse itself, although there is some evidence that certain rather specific and definite types of play are also part of the inherited equipment. Just as puppies and kittens play at fighting and at hunting prey, so young children of all races play, with apparent spontaneity, hunting and fighting games. More clearly characteristic of children, however, is the expression of the play impulse in imitating the activities of older children or of adults. The importance of this type of play in facilitating learning is obvious. Long before the child can appreciate or understand the purpose or value of certain movements, he has the impulse to learn how to make these movements. Play is essentially activity that is self-sufficient, that has no consciously recognized end or aim. The impulse to play, then, may be looked upon as one of nature's provisions for insuring the learning of useful activities at a time when the real meaning or value of these activities cannot be understood.

The tendency to imitate. — The imitative factor has already been referred to as one of the important modes of mental development (Chapter VI), and we have just noted the fact that the play impulse often works itself out through imitative movements. That there is a "general instinct" of imitation, or an innate tendency to copy everything that one sees, is seriously doubted by most psychologists. It would be difficult, however, to explain

the early mastery of language without assuming that this specific impulse to imitate is an inherited tendency, and there are doubtless other very specific types of imitation that are thoroughly instinctive. The tendency to follow the social pattern, which was so strongly emphasized in Chapter VI, may best be looked upon as an acquired tendency, having its roots in some of these specific impulses, but owing its force and persistence chiefly to the social approval that normally attaches to it.

The impulse of curiosity. — There can be little doubt that there is an inherited tendency to seek new forms of stimulation, which leads us to pry into things, to explore that part of the world that lies about us, and especially to find out what we can about new and unfamiliar objects. It is well known that very young children follow with the eyes objects that are moving; it is clear that this tendency to attend to moving objects must have been of large value in the primitive life that man lived for thousands of generations; consequently such a tendency may reasonably be thought of as having a biological basis. In the same way, strange and unfamiliar objects were, under primitive conditions, sources of possible danger; hence the tendency to note such objects, and to find out what they are and what they mean, may also have been firmly established as part of the physical heritage. Again, it would have been of obvious advantage to primitive man to have a general tendency to pry into things, to explore his surroundings, to be interested naturally in what went on about him; and it is easily conceivable that a tendency having so

large a "survival value" may likewise be conditioned by inherited nerve-connections.

In any event, whether or not one is justified in recognizing an "instinct" of curiosity, it is clear that every normal child evinces a keen desire to know about the world in which he lives. Often his curiosity is quickly satisfied; almost always it is difficult to hold him very long to any of these primitive and probably innate interests; but the tendency is none the less of great value as a starting point in the process of learning.

Rivalry or emulation. — There can be no doubt that even very young children show a strong desire to draw attention to themselves, and evince marked feelings of envy and jealousy when others are given favors in which they themselves do not share. There is probably an innate basis for such desires and feelings; in any case, they are so thoroughly normal to childhood, and can be used so easily to incite the child to effort, that education has employed them freely — sometimes all too freely — as incentives to learning.

In recent years there has been a distinct reaction against an overemphasis of rivalry and emulation in the schools. It has been maintained, and with reason, that an appeal to rivalry among individuals cultivates an unsocial attitude, encourages selfishness, and sometimes puts a premium upon unfair methods of obtaining an advantage. It has also been apparent that these rivalries have their greatest influence upon only a small proportion of the group. The slow learners soon discover that their case is hopeless, and become permanently discouraged. In many schools a successful effort has been

made to replace rivalry *among individuals* by rivalry *among groups*. In this way, every member of the group has a strong motive for putting forth effort, for although he will not be able to surpass the brighter members of his group, his accomplishment, no matter how small, will add to the group's accomplishment and perhaps enable the group to surpass its competitors. Another important modification of the primitive interest in rivalry and competition has been brought about by encouraging the individual to surpass, not the record of his fellows, but his own previous record. The development of the "accomplishment quotient" (p. 192) promises to be of large service in this connection. Moreover, the emphasis upon interest as a motive reduces the opportunity for the more unfortunate expressions of rivalry. So long, however, as there is competition in the social world there will be ample stimulation of the desire to outshine one's fellows.

The social impulse. — Whether there is an inherited basis for distinctively social traits such as a willingness on the part of the individual to coöperate with others and to sacrifice his own interests for the social welfare, is a disputed question. Some students of the problem maintain that man is naturally a social animal, — indeed, that he has well-defined instincts that impel him to cooperate with his fellows and to sacrifice his own desires for the common good. Others are skeptical as to the existence of these inherited tendencies; they are disposed to regard man as naturally an unsocial animal, and to explain the tendencies toward coöperation and sacrifice as traits that have been acquired because of

their recognized value, but which have not as yet become part of the inherited equipment and which must consequently be perpetuated from generation to generation by social heredity. The question is of fundamental importance to education because the way in which it is answered will make a decided difference in the responsibility that education must assume for the development of the social traits and in the methods that will be employed to this end. Perhaps the safest hypothesis for education to accept pending further light is to recognize certain social tendencies as probably innate,[1] but in general to regard such tendencies as less strong and pronounced than the individualistic tendencies, and consequently in greater need of confirmation and development through precept, example, inspiration, and training.

Other applications of the theory of innate tendencies. — The above list does not comprise by any means all of the inherited tendencies that man possesses nor even all of the inherited tendencies that are important in teaching and learning. It may serve, however, as an introduction to the more extended study of "original nature" in the courses that the prospective teacher will

[1] Some cases are clear and unequivocal; for example, the mother's impulse to sacrifice herself for her offspring. This is indisputably instinctive and is shared by the females of animal orders below man. There is probably, too, an innate basis that lies back of the desire for human companionship and the dread of solitude, but it seems likely that the custom of living together in large groups was a relatively late development in human evolution, and consequently that the "herding" instincts are not so deeply rooted as in some of the lower animal orders. It seems fairly evident that mankind does not possess *innate* social tendencies that are at all comparable with the social instincts of the ants, wasps, and bees, although mankind has clearly demonstrated its ability to *acquire* social traits that are just as complicated as are the activities of these animals. The important point is that, if social traits are acquisitions, they can be perpetuated only by social heredity, and particularly by some form of education.

later undertake, especially in the field of psychology and child study. It may also give point to the following brief exposition of two important hypotheses.

Periodicity in the appearance of innate tendencies. — It is generally believed that certain of the innate tendencies do not operate with equal strength throughout life, but have, so to speak, their periods of rise, dominance, and decline. It is well known, indeed, that marked changes in interests and impulses come with the development of the sex-functions (the period of "adolescence" beginning with girls usually at some time between the ages of ten and thirteen, and with boys a year or two later). The play impulse undergoes marked changes both before and during adolescence, as does also the impulse of curiosity. Many students of the problem believe that the social impulses do not appear in a marked measure before the onset of sex-maturity. Some important educational practices are based on this assumption. These will be referred to in Chapter XII.

Innate tendencies as the basis of attention and interest. — (1) *Primary passive attention; primitive interests.* —A more helpful hypothesis has to do with the relation of innate tendencies to attention and interest. Everyone knows that learning involves attention on the part of the learner and that a lively interest in what is learned greatly facilitates the process of learning. The innate tendencies may be thought of as the basis of *natural* or *primitive* interests. Attention is readily given to those objects and activities that "fit in" with these interests. Because such attention involves little or no effort and because it is natural and primitive, it is sometimes

referred to as *primary passive attention.* The absorption of children in their play activities admirably illustrates this variety of attention. There is no temptation to attend to anything else. Hence, while play may involve mental and physical activity of the liveliest sort, it does not require an "effort of the will" to hold one's self to it.

(2) *Active attention.* — Contrasted with this primitive or "primary passive" attention is that which is called by the psychologists "active attention." Work has frequently to be attended to that is not naturally interesting, — that does not "fit in" with any innate tendency or desire. One must then put forth effort to counteract the temptations to "do something else." Sometimes a veritable battle must be fought with one's self to determine whether duty or desire will win the victory. This type of attention is almost always demanded at certain stages in the carrying through of any sustained task. Sometimes the struggle comes at the very outset, and one writer has used the phrase, "the agony of getting started," to describe a harrowing experience that is thoroughly familiar to all of us. At other times the start is easy enough, — perhaps we are attracted by the novelty of the task (a clear case of primary passive attention), — but the later stages become tiresome, and the struggle of "active attention" centers at such points.[1] Wherever it may be, the essence of active attention is always that it involves a conflict between what we desire to do and what we "know" we ought to do, — or what,

[1] "Sustained muscular or mental effort is . . . 'unnatural' to us, though it is necessary for the creation of the wealth and power without which civilized men could not exist." — Graham Wallas: *The Social Heritage,* p. 27.

in any case, we are obliged to do. This capacity to work steadfastly against desire, to hold primitive impulses in leash, and to pursue a steadfast course toward a remote goal, is so important that it has been characterized as the most important of all human attributes.

Secondary passive attention: derived interests. — A third form of attention sometimes grows out of these bitter struggles. When a person has held himself resolutely to a task that has been initially unattractive, he may find that it gradually loses its disagreeable features, and not infrequently that it even comes to acquire a fascination of its own. There is no longer needed the desperate effort to resist distractions; there is no longer the struggle against desire. Attention has become "passive" again, but it is different in its origin from primary passive attention in that it is not mediated by primitive interests or innate tendencies. An *acquired* or *derived* interest has been achieved. Sustained work now goes forward smoothly and persistently. A remote goal is constantly being approached, but one does not have to use this goal as a whip to keep one's self true to the course.

This hypothesis has educational and ethical implications of large importance because it offers a working explanation of the way in which the higher forms of interest are developed, — an explanation, too, that seems to be in harmony with the experience of most people. It should be recognized, however, that there is a difference of opinion among students of the problem as to the strict validity of the theory. Some believe that permanent interests of the higher type can be developed only

through the effort and struggle that active attention involves. Others maintain that primitive interests based upon innate impulses may pass over into derived interests of a permanent type without involving this more or less protracted period of intense and usually disagreeable effort. As to the fact that permanent and desirable interests are often developed through work that is distasteful either at the outset or during some of its intermediate phases there seems to be no doubt. The question at issue is whether the struggle cannot be abbreviated or even avoided if appropriate steps are taken.

Summary. — The present chapter has aimed to set forth some of the more important facts and hypotheses regarding original nature as manifested in instincts and innate tendencies, and the bearing of these facts and hypotheses on the problems of teaching and learning. The most important conclusions are: (1) that man possesses an inherited equipment of tendencies or impulses, some of which greatly facilitate the learning process; (2) that while physical heredity is important to education because it supplies this equipment and thus makes it possible to start the processes of education, the great significance of education itself lies in the fact that it represents not physical heredity but social heredity; (3) that nature's best gift to humankind seems to have been a capacity that has enabled man to transcend nature, to rid himself of the leading strings of perfected instincts, and to work out his own destiny by accumulating and refining the fruits of his own experience; and (4) that each generation in all probability must pay the price of effort and struggle if it is to stand on the shoul-

ders of its predecessors, and itself leave an enlarged heritage for those who come after.

Questions, Exercises, and Problems

1. To what extent, if any, is there a difference in plasticity between male and female of the human species?
2. Make a list of cases in which qualities have been said to have been inherited, — such as musical ability, art ability, skill in the use of tools, ability to speak in public, etc., and determine whether they can be explained on the basis of the influence of early social environment.
3. By observing children, find a clear case of each kind of instinctive activity (or inborn tendency) named in this chapter, — and others, if possible.
4. In a similar way, find clear illustrations of "primary passive attention," "active attention," "secondary passive attention," "native interest," and "derived interest."
5. In what ways and how has man "transcended nature"?
6. How does the social heritage increase in volume? In quality? How could a reverse process be set up and mankind move toward, even into, barbarism?

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Chapter VIII

ADAPTING MATERIALS TO INDIVIDUAL CAPACITIES

The problem of the chapter. — In the preceding pages, the materials of education have been set forth in broad outline (Chapters III, IV, and V); the conditions under which these materials may stimulate mental growth within the limits set by native capacity have been discussed (Chapter VI); and the importance of enlisting the instincts and inborn tendencies in the service of education has been emphasized (Chapter VII). We now come to the heart of the teaching-problem, which is to adapt the materials of education that are socially valuable (and many of which are socially indispensable) to the widely varying capacities for learning represented by the pupils of the universal school. We revert again to a fundamental principle: However important, even indispensable, the elements of the social heritage may be, their values cannot be realized in education until they have been reëxperienced by the learner and made an integral part of his life.

Individual Differences in Learning Capacities

The fundamental significance of individual differences. — In order to appreciate the really stupendous character of the problem that effective teaching must solve under the conditions of universal education, one

must understand something of what the psychologist speaks of as "individual differences," or the wide variations among individuals in the capacity to learn. During the past two decades a great deal of careful work has been done in the scientific study of these differences, and the results of this study are already beginning to affect profoundly both the theory of education and the art of teaching. In this introductory book, it will not be possible to discuss this problem in detail. At the very outset of his professional study, however, the prospective teacher should recognize the importance of the problem, and know something of the way in which it will affect his later work.

The *fact* of individual differences in learning-capacity has, of course, been known to teachers from time immemorial. Some children are "bright"; others are "slow," "dull," or "stupid"; and a large number are recognized as "average." Scientific studies were not needed to establish this fact, — but scientific studies have been important in revealing, first, the *extent* of these differences; secondly, their degree of *persistence* (whether they tend to disappear with further growth or to last through life); thirdly, their character as *general* or *specific* (whether a person who is "dull" in one kind of learning is likely to be "dull" in all kinds of learning); and fourthly, their *cause* (whether they are due to inheritance or to early training or to accidents of disease, nutrition, or what not).

The extent of variability in learning-capacity. — Scientific studies have shown that the differences in learning-capacity are much wider than teachers generally

believed prior to these studies. Of 100 six-year-old children it may be predicted that two or three could complete the work of the eighth grade within four years if they were stimulated to the same degree of effort that the average pupil will take to complete the same work in eight years; while approximately the same number of pupils working eight years with the same degree of effort will scarcely achieve a reasonable fourth-grade standing.

Our knowledge with regard to this problem is most dependable in the case of arithmetic, because progress in this subject can be measured more accurately than progress in subjects like geography and literature. Basing his conclusions on a large number of studies of individual differences in the capacity to learn arithmetic, Thorndike[1] says:

> "The variation within a single class for which a single teacher has to provide is great. Even when teaching is departmental and promotion is by subjects, and when also the school is a large one and classification within a grade is by ability — there may be a wide range for any given component ability. Under ordinary circumstances the range is so great as to be one of the chief limiting conditions for the teaching of arithmetic. Many methods appropriate for the top quarter of the class will be almost useless for the bottom quarter, and *vice versa*."

The persistence of differences in learning-capacity. — It is probably true that the wider differences in learning-capacity tend to persist throughout school life. The pupil who learns quickly in the first grade is likely to learn quickly in the fourth grade, the eighth grade, and

[1] E. L. Thorndike: *The Psychology of Arithmetic*, pp. 289 f. Macmillan, 1922.

throughout the high-school and college years; and the slow learner of the first grade is likely to be similarly handicapped in his later work. There are, however, numerous and important exceptions to this general rule, as will be pointed out when the causes of these differences are under discussion.

Is there a "general" learning-capacity or are learning-capacities specific? — The answer that scientific investigation has given to this question is quite different from that which teachers were in the habit of giving before the problem was studied carefully by scientific methods. The clear tendency of the investigations is toward the conclusion that the person who learns one subject readily will learn other subjects readily, and this has led to the conviction among many psychologists that there is really such a thing as a general learning-capacity, — or, as they term it, a factor of "general intelligence," — which determines very largely the ease and rapidity with which one learns *anything*. This hypothesis of "general intelligence" has become of outstanding importance in present-day discussions of educational and social problems. Indeed, it is not too much to say that the future not only of education but of social organization will turn upon the conclusions that are finally accepted regarding the existence and operation of this now hypothetical or assumed factor. The topic will be reverted to later in this chapter.

The causes of differences in learning-capacities. — It is generally agreed among students of the problem that capacities for learning depend upon the condition of the nervous system, and especially of that part of the nervous

system, — the large brain or cerebrum, — the functions of which are known to be definitely related to mental life. The whole organization of the nervous system, as we have seen (Chapter II), may be thought of as an elaborate device for enabling one to make an adequate response or adjustment or movement to meet the conditions of the external world as reported through the sense-organs, and learning from this point of view involves the formation of bonds among neurones.

Variations in the nerve substance. — While this physiological conception does not teach us all that we should like to know about learning, it does furnish a helpful basis for explaining differences in learning-capacities. The nervous system is one of the important parts of the body; it is an anatomical "structure," and it is consequently likely to be subject to the same laws that govern other anatomical structures. One of the most important of these is the law of biological variation. No two individuals are alike, and human beings vary just as other animals vary. They vary in height, in weight, in color of the hair, color of the eyes, texture of the skin, and every other physical characteristic. If learning-capacities are dependent upon an anatomical structure — a purely physical characteristic — it is reasonable to assume that learning-capacities will differ among individuals just as all physical characteristics differ.

Heredity may perpetuate these variations. — Nor is this all. It is known that while these physical characteristics show a wide variability among individuals they also show a considerable resemblance among families.

Complementing the law of biological variation is the law of physical heredity, — "Like breeds like." If the color of the eyes, the texture of the skin, the tendency to be short or tall, stout or thin, are likely to be transmitted by heredity, it is reasonable to infer that the kind of nervous system that makes for quick or for slow learning is also likely to be inherited; and this inference seems to be fairly well borne out by actual cases, for bright parents tend to have bright children and dull parents tend to have dull children.

Heredity as a factor in determining individual differences. — The chief cause of the differences in learning-capacity that so greatly complicate the teacher's task, then, is generally believed to be nothing less than heredity. Some children are "born long" and others are "born short," and there, one might say, is the end of it — only, from the teacher's point of view unfortunately it is rather the beginning of it!

Some differences in learning-capacities are doubtless due to environmental factors. — While there can be no reasonable doubt that many and perhaps most of the differences in learning-capacities are due to inherited differences in the structure and functions of the nervous system, there are certainly some cases in which the factor of heredity does not play the determining part: —

(1) Nourishment. — Children are sometimes apparently "slow" and "dull" because they are undernourished. This has been found so serious a handicap to effective work in certain schools located in the "slums" that nutritious lunches are regularly provided, in some

cases at public expense and in others by philanthropic enterprise, and almost invariably with a marked effect on the pupils' progress in school.

(2) Sleep. — Insufficient sleep and other conditions that promote physical exhaustion, such as undue excitement or an overplus of worry, may have a depressing effect upon learning-capacities.

(3) Gland action. — Some persons are very sensitive to discouragement. Failures or disappointments will depress them mentally to the point where they may seem to be (and sometimes actually are) dull and obtuse. Success, on the other hand, may inspire them with a self-confidence that seems to release new sources of energy; and they often surprise themselves and those who know them by the rapid progress that they make. It is now believed that these effects are due to physiological causes; the action of certain glands, — especially the thyroid, pituitary, and adrenal glands, — seems to be profoundly affected by mental states which either increase or diminish the glandular secretions, and these secretions in turn act upon the nervous system and condition the work that it does. It is true, of course, that the glands themselves, like the nervous system, are inherited structures, hence differences in learning-capacities that trace back to glandular action might be thought of as "inherited" differences. If, however, the glandular action itself depends in large part on factors that can be controlled, so to speak, from the outside, it is clear that heredity does not here impose the hard and fast limitations that it does in determining such physical characteristics as one's height or the color of one's eyes.

(4) The will to learn. — Learning-capacities depend in part upon a favorable or unfavorable attitude of the learner toward the task of learning. While a resolute "will to learn" cannot accomplish miracles it may easily turn what would otherwise be complete failure into a moderate success, — under rare conditions, perhaps, into a brilliant success. In some families and in some communities, success in school work is given a very strong social sanction; intellectual effort is taken for granted.[1] In other families and other communities, the importance of schools and of intellectual progress is not highly regarded, and the "will to learn" is not strongly stimulated. A few children doubtless have inborn capacities for learning that will override all handicaps, but for the great majority, the attitude that is encouraged or discouraged by the home and by the social environment will be an important factor in determining the progress that is made. It is well to remember, however, that even when home and community influences are not favorable, good teachers sometimes succeed marvelously well in stimulating their pupils' will to learn.

Summary. — We may sum up the evidence in a provisional way as follows: While capacities for learning are doubtless strongly influenced by heredity, and while it is true that some persons are "born long" mentally and that others are "born short" mentally, it is also undeniable that the limits set by heredity are for the great majority of people relatively wide. Leaving out the extreme cases (the very stupid on the one hand and the very bright on the other hand), and considering only

[1] Recall the discussion of this factor in Chapter VI, especially p. 137.

the large numbers that lie between the extremes and including the remediable cases, it is safe to say of this group that they are capable of learning the things necessary to a reasonably effective social life and that their progress in learning will depend chiefly upon the opportunities that are provided for them in the way of good schools and good teachers, the stimulus to systematic effort which comes from such schools and teachers and from the examples set by the home life and the community fashion, and the care that is exercised in preventing undernourishment, excessive worry, and an overplus of exciting distractions.

If this provisional conclusion suggests that the work of the teacher is full of hope, it suggests no less strongly that the teacher's task is far from easy. Even if we leave out the extreme cases, the variations among those that are left is so wide that the same methods cannot be applied with equal success to all, nor can anything resembling an identical rate of progress be insured. The problem of adaptation still looms large, and some of the ways through which adaptation is facilitated may be profitably considered at this point.

Mental Age; the Intelligence Quotient; the Accomplishment Quotient

Mental age. — In adapting the materials of education to individuals who vary in their learning-capacities, it is often helpful to know how far an individual deviates from the norm (that is, from the capacity of the average individual). It is now possible to find the amount of deviation with reasonable accuracy by determining the

"mental age" of the individual in question. Psychologists have devised mental tests which, they assume, will measure "general intelligence" or general learning-capacity.[1] (See above, p. 183.) By applying these tests to thousands of individuals, they have established norms or standards for each year of age, at least up to sixteen; in other words, they have found what score the average child eleven years old makes on the test, the score that the average twelve-year-old child makes, and so on. Having established these norms, they can then apply the test to a given individual. Suppose that this individual is twelve years old and makes the average twelve-year-old score when tested: he is then said to be "normal"; that is, his "mental age" corresponds with his "chronological age." Another child who is twelve years old chronologically may be able to make the score that is average for a fourteen-year-old child: it is clear then that, while his "chronological age" is only twelve, his "mental age" is two years beyond this, or fourteen. Still another child twelve years old chronologically may be able to make only an eight-year-old score: this child's mental age, then, is only eight although his chronological age is twelve.

Mental age and school progress. — Most children start school life at about the same chronological age, — six years is the usual beginning age in this country, — but

[1] The first distinctive tests of general intelligence were devised by Alfred Binet (1857–1911), a French psychologist. The most notable version of the Binet tests is that known as the "Stanford-Binet," for which Lewis M. Terman is chiefly responsible. Dr. Terman (born 1877) has been a professor in Stanford University since 1910 and is one of the most prominent leaders in the measurement movement. He is the author of *The Hygiene of the School Child*, Houghton Mifflin, 1915, and *The Intelligence of School Children*, Houghton Mifflin, 1919.

not all of these children, of course, are six years old mentally. A few are eight or even nine; a few are four or even three; many more are five or seven; while by definition a clear majority are "normal" in the sense that their mental and chronological ages coincide. These differences, as we have seen, may persist throughout school life. Often the children with low mental ages progress so slowly that they soon become "retarded," — that is they fall behind their chronological-age group (they "fall behind their grade") and do the work with younger children. Some of them, however, are kept with their classes, and even a sixth-grade or seventh-grade group may have pupils of about the same chronological age who vary rather widely in their mental ages. If the teacher knows the extent of this variation, he or she may find this knowledge helpful in adapting the teaching to the variation in learning capacity represented by the class.

The intelligence quotient. — Another way of finding how far individuals vary from the norm in learning-capacities is by determining the "intelligence quotient." The principle is precisely the same as in the determination of mental age, but the expression is different. The intelligence quotient is the ratio of mental age to chronological age. If, for example, a child is only nine years old mentally but twelve years old chronologically, his intelligence quotient is $9 \div 12$ or .75 (the decimal is disregarded for convenience and the quotient expressed as a whole number, 75); if he is twelve years old both mentally and chronologically his intelligence quotient is $12 \div 12$, or 100; if he is fifteen years old mentally and twelve chronologically his intelligence quotient is $15 \div 12$ or 125.

The advantage of the intelligence quotient. — The intelligence quotient, or "I. Q.," as it is familiarly called, has the advantage of indicating at once not only whether the person is below or above the norm in general learning-capacity (assuming that there is such a thing and that the tests accurately measure it), but also how far below or above the norm his station lies. It is also important in giving a ready means for finding how much of a handicap a teacher has in teaching a given group of pupils. If the median (or midmost) pupil of the group has an I. Q. of 90, it will mean that a goodly proportion of the entire class is below the norm, and one may consequently infer that the difficulties of teaching will be greatly increased over those encountered by a teacher who has a group with a median I. Q. of 115.

Dangers in an unintelligent use of intelligence quotients. — The serious danger involved in the free use of the intelligence quotient in schools lies in its character as a single and apparently simple index of a person's mental ability. Its numerical form and its very name suggest an accuracy and precision which, fortunately or unfortunately, it does not as yet reflect. The hypothesis of a general intelligence or learning-capacity is still only an hypothesis; it is not a fully established principle. Most psychologists *assume* that there is such a thing as general intelligence, and they *assume* furthermore that this factor is both inherited and very little influenced by educational[1] or other environmental factors. But these

[1] This assumption is open to the most serious question. It has rested upon a very interesting chain of reasoning. No intelligence test has been devised as yet which measures inherited learning-capacity directly. All tests measure acquired capacity, usually by measuring what the individual has actually

inferences are still assumptions; their validity has not as yet been clearly established. It is thoroughly legitimate to use the "I. Q." in a supplementary way to help the teacher in determining for practical purposes how far a pupil deviates from the norm *at the time he is measured;* but it is not legitimate to use this device in its present stage of development in such a way that hard and fast lines of cleavage will be drawn between pupil-groups, and especially in a way that will condemn slow learners to restricted educational opportunities because of their supposedly meager inherited equipment.

The accomplishment quotient. — The development of the intelligence quotient has led to another device which promises, if perfected, to be of very large service in the work of teaching. While the mental tests are not as yet instruments of precision, there can be no doubt that they furnish a fairly dependable index of a pupil's learning-capacities at the time when the tests are given;[1] in other

learned. It would seem, then, that the results of the tests (the scores made by individuals) must necessarily reflect the opportunities that these individuals have had for learning, — that is, their school opportunities. Most of the psychologists have assumed that, if the tests deal with relatively simple materials, the opportunities of all individuals who are subjected to the tests will have been approximately the same, and consequently that any differences that are revealed in scores will be due primarily to differences in native or inherited capacity. Undoubtedly this assumption would be valid in very rare instances, — for example, when the comparisons have been limited to a group of individuals all of whom have had just the same amount of schooling under the same teachers and in the same community, and all from equally good homes. It is clear that such conditions are very hard to meet. Sometimes it is possible to account for varying school opportunities and then to compute what the differences in the scores would be if all factors other than native ability *were* equal; but this, too, can be done only in rare instances. It is scarcely to be doubted that the results of intelligence tests when applied to very large mixed groups (as in the case of the famous "Army tests" given to the drafted soldiers of the American Army in the Great War) reveal, not differences in native ability, but differences in school opportunity. (See an article entitled "Do Good Schools Pay?" *Journal of the National Education Association,* June, 1923.)

[1] Even with this limitation, it is not well to depend upon a single test, particularly a "group" test.

words, they indicate, at least roughly, what he will be able to do from the standpoint of his present abilities, whether these have been inherited or acquired. Taking the intelligence quotient based on these tests, then, as an index of *present* ability, the teacher may measure a pupil's progress with reference to the pupil's ability. If he is apparently of moderate ability and still makes good progress, one may reasonably conclude that he is investing his capital well, although absolutely his progress may not be commensurate with that of brighter pupils. On the other hand if he happens to be one of the bright pupils making high score on the mental tests with a resulting high intelligence quotient, and if he then fails to progress consistently with his apparent ability, it is reasonable to conclude that he is not working up to his limit, — although even under these conditions he may make more absolute progress than the slower pupil.

Achievement tests. — The ratio between the actual accomplishment of a learner and his learning-capacities is called his "accomplishment quotient." In order to compute an accomplishment quotient, we must have numerical measures of what he accomplishes in the several school studies and definite age-norms with which to compare his own accomplishment scores. These measures and norms are furnished by the *achievement* tests that have been worked out for the more important elementary-school subjects and for some of the high-school subjects. The Courtis arithmetic-tests, the Thorndike and the Ayres handwriting scales, and the Thorndike-McCall tests for silent reading are examples. The achievement tests have been "standardized" by

giving them to thousands of children of different ages and grades, so that norms or average scores for each chronological age and each school grade are available.

Computing the accomplishment quotient. — Let us now assume a twelve-year-old child whose intelligence quotient is 115. His accomplishment in arithmetic, however, is only the normal accomplishment for a child of his age, and hence his arithmetic quotient is only 100. It may be assumed, then, that he is not doing work of the high quality that his superior ability would lead us to expect for his accomplishment quotient in arithmetic is 100 ÷ 115 or a little less than 87. Theoretically, it would seem that an accomplishment quotient could never exceed 100, but there are on record cases of children whose intelligence as measured by the mental tests and recorded in I. Q.'s is only moderate, but whose accomplishment has notably surpassed their assumed abilities. As one writer has expressed it, "So well have the teachers invested the intellectual capital of these children that the interest actually exceeds the principal."[1]

How the accomplishment quotient may help teachers. — The development of the accomplishment quotient is especially promising for two reasons:

(a) It may be used as an incentive to encourage pupils to work to the maximum of their ability. Heretofore, bright pupils often have not had such an incentive. They could easily "keep up" with, or even surpass, their slower fellows and still themselves do very little work; but if their progress is measured in terms of their own

[1] Cyril Burt: *Mental and Scholastic Tests*, p. 176. London County Council, 1921.

superior abilities, it is clear that the tables may be turned. Again, the slow pupil has been in the past under a most serious and depressing handicap, for he has been penalized for failure to achieve ends that he could, in many cases, never achieve short of a miracle. If the accomplishment quotient can do something to prevent these two types of tragedy, it will be a boon and a blessing.

(b) It is believed, too, that the development of the accomplishment quotient may make it possible to evaluate much more justly than has hitherto been possible the work done by the teacher. Obviously a teacher with a bright group of pupils will, other things being equal, make a much better showing than will a teacher to whom fate has assigned a class of dullards. If teachers are to be judged by the actual growth that they stimulate in their pupils, then clearly the factor of the pupil's initial abilities should be taken into account. The refinement of the accomplishment quotient may make this possible.

Segregated groups based upon learning-capacities. — Even before tests were devised for measuring either learning-capacities or progress in learning, some schools made it a practice to group pupils according to their abilities and to let these segregated groups work at the rate best fitted to their powers. Since the development of tests, the segregation of the very slow learners has become general in the larger school systems of the towns and cities. Separate "opportunity" rooms are provided for these special classes, and teachers are employed for them who have been especially trained to deal with the difficult problems that such work involves. More

recently, a movement has been started to provide segregated quarters and special treatment for the unusually bright or "gifted" children. It is maintained that such children need special treatment just as much as, if not more than, their dull fellows: — (*a*) because the very bright child may acquire habits of laziness and attitudes of superiority when grouped with average children whom he can surpass without effort; and (*b*) because from these groups of gifted children will probably come the influential leaders of the next generation, and special opportunities given to such a group may consequently be a social investment that will yield dividends far greater than the social return that comes from similar opportunities given to average or dull children.[1]

Problems involved in segregation on the basis of general intelligence. — The questions of policy involved in the segregation of pupils on the basis of their learning-abilities are both numerous and perplexing. There can be no doubt that the segregation of very slow learners has on the whole worked to the benefit both of the segregated pupils and of those who remained in the regular classrooms. Whether from this latter group it would be well now to remove the brighter pupils is a question upon which the opinions of teachers vary widely. In any case, the movement is going forward slowly at present, — and happily it is going forward on a careful experimental basis. Within a few years, both

[1] A prominent advocate of a special treatment for gifted children is Guy M. Whipple (born 1876), who has been one of the pioneer students of mental and educational measurements. Dr. Whipple is now a professor in the University of Michigan. He was formerly associated with Cornell University and with the University of Illinois.

the advantages and the dangers involved in the proposal will be clearly revealed, and when that time comes the question of the general adoption of the plan can be settled without prejudice.[1]

Other Ways of Adapting Teaching to Individual Differences

Emphasis upon individual treatment. — Even if it be found advisable to organize in segregated groups the pupils who resemble one another in their learning capacities, the teacher's problem of *adapting* his materials to individual needs and abilities will not by this procedure alone be entirely solved. No matter how homogeneous or uniform the individual members of a segregated group may seem to be at the outset, every individual will remain (and from the point of view of the teacher should remain) an individual.

Extreme individual treatment. — The most extreme proposals for solving the problem have contemplated an almost complete abandonment of the usual group-organization of pupils (in "classes"), and the giving of all, or practically all, of the instruction and training on a strictly individual basis. In many ways, this is not a new proposal, for the lower schools until well on in the nineteenth century[2] gave little except individual instruc-

[1] As this book goes to press, a number of careful investigations are reported in the *Twenty-third Yearbook* of the National Society for the Study of Education. The results of these investigations, as summarized by Professor Freeman, suggest the provisional inference that the segregation of bright pupils is not desirable.

[2] The organization of pupils in classes for "simultaneous" instruction may be dated from 1680, when the plan was introduced into the schools of the Christian Brethren by Father LaSalle of Rheims, the founder of this Society. It spread very slowly in France, but more rapidly in other European countries, but it did not supersede individual instruction generally until well on in the nineteenth century. *Cf.* J. Landon: *School Management*, p. 151. Osgood, 1884.

tion — the master sitting at his desk, and the pupils coming to him one at a time to "recite." The organization of pupils in classes and the development of a technique of "simultaneous" instruction were greatly stimulated by the development of universal primary education and the consequent need of taking care of large numbers of pupils without unduly increasing the teaching staff. But "simultaneous" instruction, while it has certain virtues in addition to its economy, has also a marked disadvantage in that it tends to treat all learners as though their needs and capacities were the same. Combined with the grading system (which in American urban schools dates from about the middle of the nineteenth century), it brought about a deadening uniformity of progress which has been stigmatized by the phrase, the "lockstep of the schools."[1] All pupils, irrespective of their capacities, tended to progress at the same rate, which usually meant a pace that could be sustained by most of those in the slower half of the group.

The modern movement toward a return to the older mode of individual instruction as a means of "breaking the lockstep" dates from about 1890. It has found a definite expression in a series of proposals and systems. Among the earlier of these were the "Pueblo Plan"[2] and

[1] The evil has never been so pronounced in the one-teacher rural schools as in the graded schools of the towns and cities, for the classes in the one-teacher schools will necessarily be small, and the conditions of individual instruction are more closely approximated. This virtue has frequently been emphasized by those who wish to retain the isolated open-country school. However important the virtue may be, however, it clearly does not compensate for the disadvantages which the ungraded school presents.

[2] The Pueblo plan was organized by Preston W. Search (born 1853), who deserves especial credit for the forceful way in which he called attention to the evils of the class system. He established a system of individual instruction in the schools of Pueblo, Colorado, in the early nineties, and published a widely read account of the experiment in his book, *The Ideal School*, Appleton, 1901.

the "Batavia System."[1] At the present time, typical and important expressions of the movement are found in the work that has been undertaken by Dr. Frederic Burk[2] in the San Francisco Teachers College, and in two very interesting systems known respectively as the "Winnetka Plan"[3] and the "Dalton Plan."[4]

The essential feature of the present-day proposals for individual instruction (especially the Dalton and Winnetka plans) is the very careful preparation of printed assignments or sets of directions by means of which the individual pupil can master the materials at

[1] The Batavia system attempted to combine class and individual instruction in a novel and in many ways a successful fashion. It was organized by John Kennedy, Superintendent of Schools in Batavia, New York, in 1898. An account of it will be found in W. C. Bagley's *Classroom Management*, Macmillan, 1907, ch. xiv.

[2] Frederic Burk (born 1862) has been president of the San Francisco State Teachers College since 1899. He has been one of the most active and vigorous proponents of individual instruction. In the *Journal of the National Education Association*, April, 1924, after telling of the unsatisfactory results that were obtained in his training-school by the class system, he says: "We undertook to remedy matters by announcing that thereafter no lessons would be prescribed; each would pursue his own lessons and proceed at his own rate. . . . The result was electrifying. . . . Even the poorest pupils, practically, maintained the former class rate at least. The large majority went much faster, covering two, three, four and five times the amount of work by the class rate."

[3] Organized by C. W. Washburne, a former student of Dr. Burk and now superintendent of schools at Winnetka, Illinois. Mr. Washburne's experiment has been particularly notable in connection with the working out on a scientific basis of the minimal essentials that should constitute the curriculum of all pupils, and the organization of these materials in a form that permits individual mastery.

[4] The Dalton plan came into prominence at about the same time as did the Winnetka plan. Miss Helen Parkhurst first put the plan in operation in the schools of Dalton, Massachusetts. She, too, was strongly influenced by the teachings of Dr. Burk, and also by the work of Dr. Maria Montessori (an Italian anthropologist who invented several devices for teaching young children, and who projected a general theory of education which had a widespread but temporary vogue). Miss Parkhurst's work attracted the attention of European educators, and has been extensively adopted in England. The essential feature of the plan is the careful organization of materials in series of individual assignments or "jobs" which the pupils undertake or "contract" to complete. Each pupil works at his own rate, conferring with the teacher whenever necessary, and passing to each succeeding "job" after its predecessor has been approved.

his own pace.[1] The teacher's time is then free for the giving of such individual help as may be needed.

Adaptive possibilities in the technique of teaching. — It should not be inferred, however, that those who have not advocated extreme individual instruction have been blind to the evils of the class system. Most of the principles, precepts, and practices that have been gradually accumulated in the experience of successful teachers during the past century are explicitly directed toward a correction of these evils, — toward a better provision for adapting materials to individual capacities. It is not within the province of this introductory book to set forth in detail these principles and suggestions, for their mastery forms a most important part of the training which the prospective teacher will follow in the professional school, and a rich literature is already available to supplement or complement that training. A very brief reference may here be made, however, to some of the topics which the much more intensive and detailed study of the "art of teaching," the "technique of teaching," and the "principles of teaching" will involve, especially in connection with the basic problem of adapting materials to individual learning-capacities. This preliminary view of the practical art of teaching may be best gained perhaps by a brief consideration of the general plan or "pattern" of classroom procedure as this has been developed in American schools.

The class unit. — The *unit* of the teacher's work may be thought of as the task involved in teaching a group

[1] It is interesting to note that this method of instruction has been generally employed in the private "business colleges" of this country for forty years or more.

of from twenty to forty pupils in a single subject through a single class period. It is convenient to discuss classroom procedure in terms of this unit. Indeed, the organization and conduct of this unit typify American public education as it is carried on by hundreds of thousands of teachers and as it affects millions of boys and girls. They thus constitute a general "pattern" of classroom procedure.

Two important factors in the evolution of the prevailing "pattern" of classroom procedure. — Two basic factors have determined the main outlines of this organization.

(1) The Textbook. — The first of these is the large place that the *textbook* has come to occupy in American education. The increase of numbers of pupils to be taught has always outrun the supply of adequately trained teachers, and to enable relatively untrained teachers to do school work, the materials of teaching have been embodied in textbooks that are placed in the pupils' hands, and which both furnish the subject-matter to the pupils and supply a guide for the teacher. This emphasis of textbook instruction, which has grown out of the actual needs of the situation, has led to many evils which will be referred to later in this book and which the student will be guarded against throughout his period of training; but it has also had its advantages, — so many of these, indeed, that textbooks would probably continue to have an important place in the schools even if the time should come when all teachers are well prepared for their work.

(2) Self-activity. — The chief value in the emphasis that has been given to the textbook lies in the demands that it makes on the *independent effort* of the learner.

Thus out of a dire necessity has grown a positive virtue. Almost from the outset, the pupil for a part of his learning has been thrown somewhat on his own resources. Crude and unwieldy as it has been, then, the organization of the American classroom has, in a unique fashion, reflected the fundamental principle of *self-activity*. Ineffective as our school work has been and still is in many respects, it has emphasized in its typical organization what we referred to in Chapter II of this book as the "primary condition of all learning, — namely, the active, mental effort of the learner himself."[1]

The three-fold division of classroom exercises. — Let us see how this organization expresses itself in the actual conduct of a class. The typical classroom exercise falls into three parts: (1) the *assignment* of the "lesson"; (2) the *independent work* or *study* of the pupils in "preparing" the lesson; (3) the *recitation* or group meeting for testing the effectiveness of the pupils' preparation and for discussing the results of the learning. This form or pattern of procedure, be it remembered, grew out of the imperative necessity for using textbooks; it was a "technique" developed in practice for using textbooks effectively; and yet it has within it the germ of a fundamental procedure which would persist even if textbooks as we now know them were entirely abandoned. Of far more significance to our present problem, however, is the fact that the refinement of this technique has already done much to overcome many of the difficulties involved in adapting teaching-materials to individual needs and capacities. A very brief reference may be made to these

[1] See p. 33.

refinements in connection with each of the three large divisions of the general plan or pattern:

(1) The assignment. — The word "assignment" once referred exclusively to the materials that were "set" for the following lesson; the assignment might be the "next ten words in the spelling-book," the "long-division problems on such-and-such pages," the "next chapter" in the history textbook, the sentences to be analyzed in grammar, the sections of "Caesar" to be translated, or what not. As teachers came to study the problems involved in their work they found that an important phase of teaching is concerned with the way in which lessons are assigned. The assignment, instead of referring exclusively to the materials of the "next lesson" came to be recognized as a process of teaching, and to-day one of the accepted tests of good teaching is the way in which the teacher handles the assignment. It has been found by actual experiment that the efficiency of the teacher's work in many cases can be greatly increased merely by taking account of this factor.

We shall not dwell here upon the various functions of the assignment or upon the technique by means of which these functions can be discharged. It is with the way in which the assignment may be used to solve the problems of adaptation that we are now concerned. Among the practices that have specific reference to this problem may be mentioned: (*a*) the giving of *individual assignments*[1] in addition to the general class assignment; (*b*) the provision of *group assignments*[2] whereby specific

[1] A discussion of individual assignments will be found in W. C. Bagley's *School Discipline*, Macmillan, 1914, ch. vi.

[2] For suggestions, see C. L. Robbins's *The Socialized Recitation*, Allyn and Bacon, 1920, pp. 13 ff.

problems are delegated to two or more pupils who then work together on their solution and report their findings for the benefit of the class as a whole; and (*c*) the provision of *minimal* and *maximal assignments*,[1] whereby a certain amount of work is expected from all members of the class, while additional work is provided for those who are able to accomplish more than the minimum.

(2) Training in the art of study. — Perhaps the greatest progress in adapting materials to individual capacities has been made through the development of methods for teaching pupils how to study. This need was recognized very early in the development of American education, but effective means of meeting the need have been a relatively recent development. Thirty years ago, Professor B. A. Hinsdale,[2] in a very helpful book called *The Art of Study*, made a number of suggestions toward the solution of the problem, one of the most important of which pointed out the value of setting aside definite class periods during which teacher and pupils would study a lesson together. At such times the teacher could not only give instruction in the art of study but also acquaint himself with the difficulties that individual pupils met in the effort to master the materials. The interest in the problem of study was greatly stimulated a few years ago by the work of Professor

[1] This distinction was first clearly pointed out by Miss Mabel Simpson in her *Supervised Study in History*, especially pp. 12–13, 48–49; 74–75. Macmillan, 1918.

[2] Burke Aaron Hinsdale (1837–1900) was a prominent American teacher and student of education during the latter half of the nineteenth century. As a student and an instructor in Hiram College (Ohio) he was intimately associated with James A. Garfield. Later he became Professor of the Science and Art of Teaching in the University of Michigan.

Frank M. McMurry,[1] who published in 1909 his book, *How to Study and Teaching How to Study*. This book set forth a definite technique of study which had a profound influence on the development that followed. One of the early fruits of this development was the recognition of the value of *supervised* or *directed* study as a means of supplementing class instruction and as a means especially of adapting instruction to the varying capacities of individual learners. Numerous investigations and a considerable literature[2] have centered about the study problem, and while a great deal of careful work still remains to be done before the complicated problems involved are satisfactorily solved, it is none the less true that a most promising beginning has been made.

(3) Improvements in the recitation. — Improvements in the technique of the recitation have also contributed something toward the solution of the difficult problem under discussion, — the problem of adapting materials to varying capacities. In its earlier stages of development, the recitation was merely what its name signifies, — a "recital" by the pupils of the materials learned. It was a testing rather than a teaching exercise,

[1] Frank Morton McMurry (born 1862) has been for twenty-five years one of the best known American teachers. His earlier work was in the Illinois State Normal University. Since 1898 he has been Professor of Elementary Education in Teachers College, Columbia University. He is the author of several important books for teachers, including *How to Study and Teaching How to Study*, Houghton Mifflin, 1909, and *Elementary School Standards*, World Book Co., 1912.

[2] In addition to the books of Hinsdale and McMurry, the following titles include some of the more important contributions to the literature of this field: Lida B. Earhart: *Teaching Children to Study*, Houghton Mifflin, 1909; Olive M. Jones: *Teaching Children to Study*, Macmillan, 1909; Alfred L. Hall-Quest: *Supervised Study*, Macmillan, 1915; Guy M. Whipple: *How to Study Effectively*, Public School Publishing Co., 1916; R. L. Sandwick: *What to Study and How to Study*, Heath, 1915; F. W. Thomas: *Training for Effective Study*, Houghton Mifflin, 1922.

and because of the heavy premium placed upon an accurate reproduction of the learned materials it encouraged rote-learning or memorizing words with little reference to their meaning. Conscientious teachers recognized this evil, but how to prevent it and at the same time insure an adequate mastery of the subjects studied was another matter.

One of the first steps toward the solution of this problem was an effort to get pupils to "recite," not in the "words of the book," but in "their own words." This seems to be a rather trifling change, but its effect was profound. Gradually the recitation as conducted by good teachers lost much of its stiffness and formality, and was transformed into a far more informal or conversational discussion of the lesson-materials. No longer satisfied with the parrot-like repetition of memorized words, the teachers asked searching questions which would reveal whether the pupils actually understood what they were talking about. Difficulties in the way of such understanding were revealed by this process, and the teachers were then in a position to explain and amplify the textbook materials, and even to take especial pains in the assignment of lessons to clear up some of the difficulties in the way of understanding that would otherwise tempt pupils to memorize without comprehending the meaning of what they learned. A technique of questioning as a means of promoting a real mastery of materials became more and more clearly recognized.

The "Socialized Recitation." — The many detailed stages in the development that followed cannot be set forth here. It is sufficient for our present purposes to

point out that the important tendency in the development of the recitation has been toward the recognition of the class or pupil-group as a *social* organization rather than as a mass, or a mere aggregation, of individuals. In the best schools to-day, the class represents a *company of learners*. More and more the teacher is happily losing his traditional character as a taskmaster, and is taking on the far more effective qualities of a companion, a leader, and a guide. The attitude of both teacher and pupils has undergone a fundamental change, and this change in attitude has meant a corresponding change in the spirit and morale of the classroom. Not all can do the same amount of work; not all can do the same work; but each can do something that will be of value to the group as a whole. *A fundamental virtue of the "socialized recitation" lies in the recognition that it gives to individual differences and capacities.* Each pupil contributes in proportion to his ability, and a most significant task of the teacher is to study each individual to find just what he can contribute, and how through this contribution his growth may be best assured.

Summary. — It may be concluded, then, that much can be done to adapt teaching-materials to individual differences in needs and capacities even if pupils are not segregated on the basis of such capacities. Much can be done, also, without surrendering the obvious social values that inhere in class instruction, and returning to the older mode of individual instruction. The technique that has been developed in the evolution of the typical pattern of classroom procedure provides one answer to the problem of individual differences.

Questions, Exercises, and Problems

1. Select two pupils in the same class (preferably in one of the lower grades) for observation as to their learning capacities. Note particularly differences in the ability of the two to learn the same subjects and in the ability of each with different subjects. Note the different ways in which the teacher treats the two pupils.

2. Observe three or four successive lessons given to a class. As you observe try to rate each pupil as a "quick learner," an "average learner," or a "slow learner." After completing the observations, make a classification of the pupils on these three bases. If you have observed them in different subjects, note whether they have the same relative rank in each. Note any variations in the ratings from day to day. If possible, have the teacher check your ratings, and try to discover the reasons for any misplacements that you may have made.

3. Compare three standard tests of general intelligence (such as the Stanford revision of the Binet tests, the Otis group tests, and the Army "Alpha" tests). Study typical questions presented in the tests and try to determine what kinds of mental ability each measures. Which seems to you to be the best of the three tests and why? Make a list of the characteristics that in your judgment a good test of "general intelligence" should represent.

4. Make a study of the ways in which a good teacher whom you may have the opportunity to observe adapts instruction to individual capacities (1) in assigning lessons, (2) in directing or supervising study, (3) in conducting recitations, and (4) in other ways.

Suggested References

It is recommended that the student who is just approaching the problems involved in the measurement of intelligence turn first to books and articles that have been prepared for the general reader rather than to the technical literature of the field. A start may well be made with such articles as E. L. Thorndike's "Intelligence and Its Uses," *Harper's Magazine*, vol. cxl, 1920, pp. 220 ff.; S. S. Colvin's, "Native Intelligence, Growth, and Opportunity," *American Review*, vol. i, 1923, pp. 650 ff.; H. C. Link's "What Is Intelligence?"

Atlantic Monthly, vol. cxxxii, 1923, pp. 374 ff. See also the articles in the *Twenty-first Yearbook* of the National Society for the Study of Education, Public School Publishing Co., 1922, Part I, especially the contributions of Dr. Thorndike (pp. 1–9) and of Dr. Colvin (pp. 10–44).

Other general references on intelligence tests are:

L. M. Terman — *The Intelligence of School Children*, chs. i, ii. Houghton Mifflin, 1919.

R. Pintner — *The Measurement of Intelligence*, chs. iv, xx. Holt, 1923.

H. C. Hines — *Measuring Intelligence*. Houghton Mifflin, 1923.

A. R. Mead — *Learning and Teaching*, ch. ix. Lippincott, 1923.

On achievement tests, see:

E. A. Turner — *Essentials of Good Teaching*, chs. xiv, xv. Heath, 1920.

G. D. Strayer and N. L. Engelhardt — *The Classroom Teacher*, ch. ix. American Book, 1920.

General references on individual differences:

E. L. Thorndike — *Education: a First Book*, pp. 67–70. Macmillan, 1912.

G. D. Strayer and N. L. Engelhardt — *The Classroom Teacher*, ch. iv.

A. R. Mead — *Learning and Teaching*, ch. vii. Lippincott, 1923.

N. Norsworthy and M. T. Whitley — *The Psychology of Childhood*, pp. 320–334.

G. D. Strayer and N. Norsworthy — *How to Teach*, ch. x. Macmillan, 1918.

Chapter IX

THE OUTCOMES OF TEACHING AND LEARNING

Problem of the chapter. — In discussing the materials of education (Chapters III–V), it was pointed out that they owe their significance very largely to the fact that they crystallize the important results of human experience. They constitute the various ways in which man has transcended nature (p. 178) by building up "controls" of conduct differing essentially from the instinctive controls that determine the behavior of the lower animals. It is especially important that the various outcomes of teaching in stimulating learning be classified with respect to the ways in which these outcomes affect conduct or behavior, — in which they develop effective "controls" of conduct. Certain terms which are often used in the discussion of educational problems and which represent the outcomes of teaching and learning have appeared frequently in the preceding discussions, — such terms as habits, skills, ideas, ideals, and attitudes. It is necessary to consider in some detail the differences among these outcomes and the ways in which the materials of education can be made to engender them.

The Distinction Between "Fixed" and "Adaptive" Controls

At the outset a very important distinction divides the controls of conduct into two great groups which may be

called for convenience, the "fixed" and the "adaptive" controls. The two groups, as we shall see, have important interrelations, and each has a bearing upon the development of the other, but it is important to distinguish between them because some basic educational principles follow from this distinction.

The economy of establishing fixed responses to recurrent situations. — It is clear that there are certain types of conduct the significance of which to civilized life is persistent or at least relatively unchanging. We may safely predict that the children who are in our American schools to-day will need in their adult life to use the English language with a reasonable degree of fluency, precision, and grammatical correctness. We may predict that they will need to write legibly and to spell correctly the words that are commonly employed in communicating ideas; that they will need a fair mastery of the arts of computation; that they will need habits of clean living and wholesome exercise.

For special groups, other needs may be predicted. Those who become farmers will need specific skills concerned with the cultivation of the soil and the care and breeding of animals; those who become machinists, carpenters, or masons will need other specific skills some of which are not likely to change very much within the next few generations; and the same is true of other specialized groups. These groups need not detain us at the present time, however, for this book is concerned chiefly with the education that is common to all rather than with the specific education of different occupational groups. The point is that, even in the former type of education,

there are specific and definite situations, needs, and relationships that all children will meet in later life and for which the school can prepare them in very specific and definite ways.

The equal need of adaptive controls. — On the other hand, there is no fact more clearly obvious than that the conditions of civilized life are continually changing. We have already referred to the fundamental changes that the Industrial Revolution brought about (pp. 110 ff.) and to the changes that are now going on under the stimulus of the "ideal of progress" (pp. 145 ff.). Social, political, industrial, and even hygienic conditions are in a constant flux. New situations are continually arising for which existing solutions are quite inadequate. Scientific discoveries are made which, almost overnight, render our older scientific information obsolete and inadequate. New inventions compel us to send our old machinery to the scrap-heap, — and along with the machines must often go the skills that were laboriously developed for operating them. A great war in another part of the world shakes our own political structure to the very foundations, and necessitates a reconstruction of some of our most deeply-rooted conceptions. All this is of the very essence of civilization. Education, which has aimed to prepare the young for the responsibilities of adult life, has itself been an important factor in preventing the static and unchanging condition which would greatly simplify its problems. The very flux and change which it has played a large part in bringing about multiplies a thousandfold the difficulties that its work involves.

The school faces, then, what seems to be at first glance an impossible task: it must prepare each generation for the solution of problems that cannot now be foreseen. But the task, while difficult enough, is not entirely insurmountable. Not only can the school fix specific and definite controls of conduct that will enable the learner to meet the unchanging and persistent situations of life, but it may do much to make him far more *adaptable* to new and unpredictable situations than he would otherwise be. In other words, there are certain outcomes of teaching that are essentially *fixed* outcomes; there are other outcomes that are essentially *adaptive* in their character and in the influence that they exert.

A. Habits and Skills as Fixed Outcomes

Habits as specific responses to recurring situations. — A specific habit is an automatic or mechanical association between a stimulus and a response that has been acquired through experience. It is entirely analogous to the simple inherited responses that are called "reflex" movements, but unlike the latter it has been learned and not inherited.

Illustrations of specific habits. — The work of the elementary school fairly bristles with these specific habits. When a child learns that six sevens are forty-two, and then through repetition makes this association or connection or "bond" so thoroughly automatic that, whenever the stimulus "six sevens" is given, the response "forty-two" is instantaneous — coming without thought or reflection, without the slightest temptation to say forty-one or forth-three or any other number ex-

cept forty-two — then a specific habit has been formed, and a very definite "control" of conduct has been established. When one learns how to spell a difficult word like "believe" or "receive" and then through repetition reaches the point where the word "leaps" from the pen, so to speak, without involving on the part of the writer a conscious effort to determine whether the *i* comes before the *e* or the *e* before the *i*, another specific habit has been formed, another "control" of conduct established. When one learns to use the future auxiliary forms correctly, — to say, without consciously debating about the matter, "I shall" and "We shall," "You will" and "He will" and "They will" when simple futurity is implied and to use the converse forms when deliberate intent is to be expressed, — still other specific habits have been formed.

These illustrations are typical of a large number of habit outcomes that the elementary-school teacher seeks to establish. The aim of his effort is the permanent fixation of very specific associations or bonds. In the cases just cited, the associations are linguistic, but there are, of course, innumerable habit-responses that are not concerned with the association of words or of the ideas that lie back of words. Some of these, also, are significant in school work. Habits of good posture in sitting and standing are especially important in this connection, and the difficulty of establishing such habits without at the same time imposing a "wooden" stiffness upon the classroom becomes a serious problem. More and more, too, the school is coming to concern itself with the health-habits of the pupils outside of the school. As was pointed out

in an earlier section (p. 124), the aim of health teaching is to insure the living of a healthy life, and this means above all the early formation of health-habits. To brush the teeth at stated intervals and in the right way; to open the window before going to bed; to chew food thoroughly; to bathe frequently and at definite times; — these are only a few of the types of conduct for which "habit-controls" must be established.

Important, too, are the little automatic responses that, when added together, constitute so important a part of one's equipment in "manners." That a boy should stand aside to let a woman or an older person pass first through the doorway; that he should take off his hat when greeted by a woman or an elderly man; that he should listen attentively to what others are saying and express his own opinions without rudely interrupting them: these are assuredly among the things of persisting value in a changing world. It is true that they should be something more than habits, but it is also true that unless they are habits first it is not likely that they will ever be anything more.

The distinction between habits and skills. — The difference between habits and skills is chiefly the difference between relative simplicity and relative complexity. Skills may be thought of as more or less elaborate combinations of specific habits. In learning to drive an automobile, for example, one must consciously master a large number of separate movements. Each of these may be considered as a specific habit. Some are very simple and easily learned, such as pressing the foot on the brake; others are more difficult, such as passing from "low"

through "intermediate" to "high." Most persons who learn this art undergo a period of distinct discomfort. They must make each movement consciously and carefully, and after the specific movements have been mastered, they must continue the period of conscious direction while the simple or "lower-order" habits are being combined into complex or "higher-order "habits. Gradually, however, the connections become fixed; the whole chain of adjustments is completely mechanized; the "skill" has been acquired.

The "skill" subjects. — In the elementary school, such subjects as reading, writing, drawing, manual training, and the household arts are essentially "skill" subjects, and an important field of educational investigation is to determine by careful experiment just what skills are essential and how best to teach these skills. The history of the methods of teaching reading illustrates clearly the need for such investigations. Should the smaller habits be formed one at a time and then combined, or should larger skill units be attacked at the outset? Should the "unit" in beginning reading be the *letter* (the "alphabetic" method), the *sound* of letters and combinations of letters (the "phonic" method), the *word* (the "word" method), or the *complete sentence* (the "sentence" method)? Controversy has raged rife over the alleged virtues and defects of these methods, but of late the whole problem has been attacked from the objective and scientific point of view, and marked progress has been made particularly in determining the number and kind of specific habits involved in the complex reading skills. Handwriting has been similarly analyzed into its

component habit-elements, and the best methods of combining these elements into the requisite skills are being carefully studied.[1]

The habit and skill elements in arithmetic have also been subjected to careful scientific investigation with the result that the teaching of arithmetic in the elementary schools is far more effective to-day than it has ever been in the past.[2] A promising beginning has been made, too, in determining the habit elements and skill combinations that are important in effective oral and written composition.[3]

The practice curve. — Before scientific investigation attacked seriously the problems involved in the skill subjects of the elementary school, a great deal of good work had been done in the study of the acquisition of skills in such fields as telegraphy and typewriting. Among the important results of this study was the plotting of the typical "practice curve" or the "curve of learning" in the mastery of skills. As will be noted in the graph (Figure 1), progress in learning a skill is relatively rapid at the outset, but sooner or later growth becomes

[1] The scientific study of the problems involved in reading and handwriting has been an important part of the work of the School of Education of the University of Chicago. These investigations have been stimulated by Charles H. Judd (born 1873), formerly a professor of psychology in Yale University; since 1909 director of the School of Education of the University of Chicago; and a most influential advocate of the scientific method as a means of solving educational problems. Especially significant have been the investigations of Dr. Judd and Dr. William S. Gray (born 1885) in the field of reading, and those of Dr. Frank N. Freeman (born 1880) in the field of handwriting.

[2] The pioneers in the scientific study of arithmetic have been Stuart A. Courtis (born 1876), who for a long time has been connected with the public schools of Detroit, and who now also has a chair in the University of Michigan, and Edward L. Thorndike (see footnote, p. 149).

[3] Of outstanding importance is the work of Werrett Wallace Charters (born 1873), for many years dean of the School of Education, University of Missouri, later of the University of Illinois, and still more recently of the Carnegie Institute of Technology at Pittsburgh and the University of Pittsburgh.

more gradual until finally the curve "flattens out"; that is, further practice produces little or no perceptible improvement. Of especial importance, however, is the fact that the upward trend of the curve is not uniform, but rather broken by periods when no progress is made or

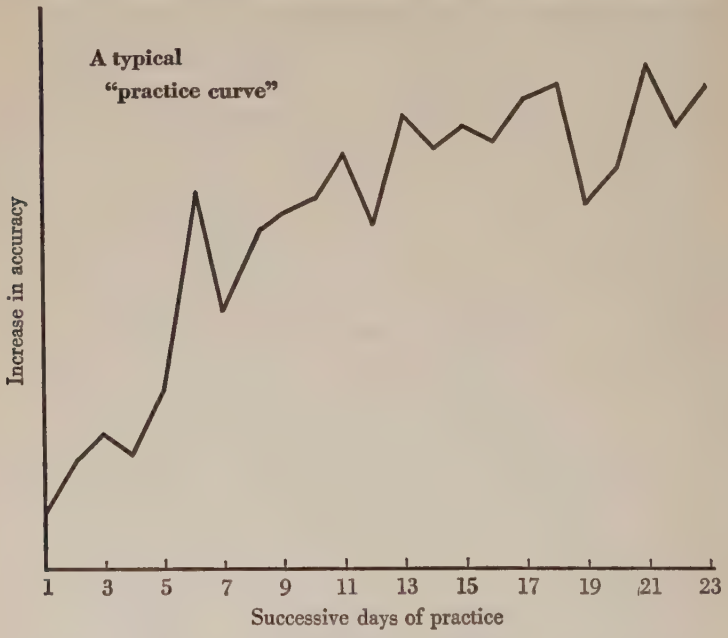


FIG. 1

when the learner actually reverts to a lower level of performance. When these periods are somewhat extended in time, they are known technically as "plateaus," and a lively discussion has arisen as to their significance. Some students of the problem believe that they represent the successive stages of forming "lower-order" habits (p. 216) into "higher-order" habits, and are inclined to

consider the plateau an inevitable accompaniment of successful learning. Others look upon them as due chiefly to fatigue, tedium, lack of interest, or lack of motive, and are inclined to believe that, with proper guidance, the plateaus could be greatly reduced in number and perhaps entirely eliminated. The question is important to education because the plateau periods are extremely discouraging to the learner; many persons, indeed, who start out valiantly to master a complicated art give up in the earlier stages because it seems to them impossible to make further progress.[1]

The "drill lesson." — An important result of the recognition of habits and skills as specific outcomes of teaching has been the refinement of a special technique for the class exercises that aim to develop skills. This technique involves five principles:

(1) Motivation. — It is generally agreed that the task of forming a habit or a skill should have behind it a strong desire on the part of the learner to master the process; hence, it is considered good practice to spend some time in showing the learner why the habit or the skill is important, how it will help in meeting and solving the problems that he will face, — in short doing everything that can be done to provide a motive for (or *motivate*) the sustained effort that is necessary to mastery.[2]

[1] The best known name connected with the early study of the practice curve is that of William Lowe Bryan (born 1860), who in 1897 published, in collaboration with N. Harter, a penetrating study of the processes involved in learning telegraphy. Dr. Bryan has been since 1902 president of Indiana University. Other well known students of the problem are Edgar J. Swift (born 1860), a professor in Washington University, St. Louis, and William F. Book (born 1872), now an official in the State Department of Public Instruction of Indiana.

[2] The importance of motivation extends, of course, to other types of learning. What may be called the "doctrine of motivation" has been set forth in

(2) Focalization. — We have already seen (Chapter II) that learning normally involves getting first of all a clear *idea* of what is to be learned. While habits and skills operate with little conscious guidance, this does not

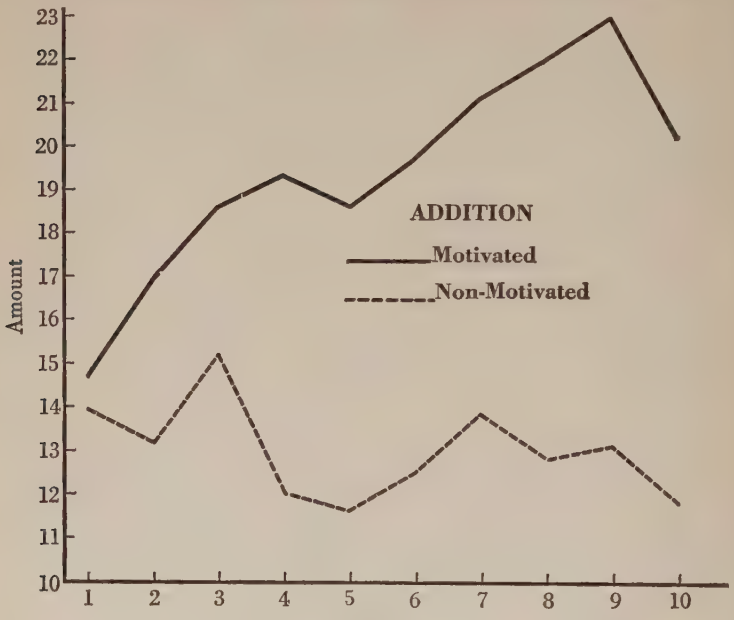


Fig. 2

mean that conscious direction and guidance are not necessary in their establishment. Far from it. The more clearly the learner sees "in his mind's eye" the new adjustment that he is to learn, the more quickly (other

detail in H. B. and G. M. Wilson's *Motivation of School Work*, Houghton Mifflin, 1916. Harry B. Wilson (born 1874) has been superintendent of schools in Berkeley, California, since 1918. Guy M. Wilson (born 1876) was for several years associated with the Iowa State College, and is now a professor in Boston University. The graph (Fig. 2) is from a study by J. C. Chapman and R. B. Feder, *Journal of Educational Psychology*, Oct. 1917.

things equal) will he master it. Good teachers, then, make it a point very clearly to demonstrate or illustrate a new skill. They try to fix the attention of the learner upon the essential elements; this is referred to as "focalization," or bringing the essential elements of the process into the *focus* of consciousness. The "assignment" (p. 203) of a drill lesson is frequently devoted to the two problems of motivating and focalizing the new process.

In assigning a spelling lesson, for example, the teacher may first refer to the meaning and significance of the new words, calling attention perhaps to the fact that these words have been misspelled in the previous written work of the pupils, or in other ways arousing interest in ("motivating") the new lesson. The correct form (not the misspelled form!) of each word is then carefully considered, with especial emphasis upon the letter-combinations that ordinarily cause confusion (the first *a* in sep*a*rate, for example, or the place where the *l* is doubled in para*ll*el). Similarly, in a writing exercise, the appropriate *movements* may be focalized by careful demonstration, the teacher having the pupils follow his movements as he writes the letter or the word on the blackboard.

(3) Attentive repetition. — Another important phase of habit-building is repetition or practice. Generally speaking it is only through repeated practice that the habit-bonds can be firmly fixed. From the teacher's point of view, the difficulties in forming habit are largely concentrated here. Repetition tends inevitably to become monotonous, and the normal mind of childhood abhors monotony as nature abhors a vacuum. Furthermore, listless and perfunctory repetition may be even worse than no repetition at all, for when interest flags, attention is likely to be distracted, carelessness results,

errors creep in, and a cumbrous, ineffective habit is likely to result. It becomes a serious problem, then, to insure not only continued repetitions but careful and *attentive* repetitions.

The problem may be solved in several ways. If the "motivation" has been strong enough it alone may serve to hold the learner to the needed repetitions, but this happy outcome is far from frequent. Even a keen desire to master a skill may lose its strength long before the simpler habits have been thoroughly mechanized. Recognizing this probability, the skillful teacher provides additional incentives for sustained effort. He may employ rivalry and emulation (p. 172), pitting groups against one another as in a spelling match. He may utilize standard tests (p. 193) to incite the learner to surpass his own best previous record. He may employ "devices" to introduce a superficial variety into the practice while the essential process that is being learned remains unchanged. Thus, instead of drilling exclusively on the multiplication-tables in their organized form, he may use number "flash-cards" on which various combinations have been printed and which are presented to the class quickly with a premium of some sort placed upon ready and accurate responses.

It has been fairly well established by experiment that drill or practice periods are most effective when not too long, especially if one is just beginning to learn a new art. As practice continues, too, the intervals between the drill periods may profitably be lengthened.

(4) Permitting no exceptions.—An important precept of habit-formation is very sedulously to guard against exceptions or errors in the practice. This is one of the principal reasons, of course, for laying so heavy an emphasis upon attentive repetition. It also suggests a reason for the superior effect of brief practice periods at the outset in the earlier stages of learning. If the practice continues until fatigue sets in, the chances of error are greatly multiplied.

(5) The "law of effect." — As a rule, habits are formed more quickly when each step toward their perfection appeals to the learner as satisfying some need that he feels. Contrariwise, unpleasant results tend to keep the desirable bonds from becoming fixed. Hence habit-formation is usually subject to what Professor Thorndike has called the "law of effect."

The fundamental importance of habit-formation. — Many teachers who have acquired skill and insight in the difficult work of habit-formation find this apparently laborious and uninspiring phase of teaching replete with satisfactions. They enjoy seeing their pupils grow little by little, yet perceptibly, and now (since the development of standard tests) even measurably, in the increments of habit that in the end and in the aggregate will mean so much in the way of growth, development, and mastery. Taken each by itself, these increments seem small and trivial; and yet, "little things" though they are, they are fundamental to the work that the school has to do, and this work is very far from a "little thing." Much that man has accomplished in the past is represented by these tiny increments of habit and skill that form so large a part of the materials of elementary education. In the individual as in the race, every little conquest bravely attempted and toilsomely wrought is a step upward.

No one has so forcefully and eloquently written upon the subject of habit as did William James in a famous chapter of a great book, *The Principles of Psychology*.[1]

[1] William James (1842–1910) is recognized as the most distinguished scholar that America has so far produced. By training a physician, he later became a profound student of psychology and philosophy. He taught for several

We commend to the prospective teacher this book (or its briefer form published under the title, *Psychology*) and especially the chapter on Habit. He or she will find in it much that will lift the difficult work of habit-building from the level of a routine and perfunctory task to the plane of a "great adventure."

B. Ideas, Concepts, Facts, and Principles as Adaptive Outcomes of Teaching and Learning

The distinction between habits and ideas. — We have already seen that the formation of a clear *idea* is an important initial step in forming a habit. An idea is a mental picture, either (1) a conscious revival or *reconstruction* of an experience, or (2) a *construction* formed from elements of different experiences. For example, one may revive more or less accurately an image of an acquaintance, or the details of a journey that one has made; or one may build "in the imagination" a character that combines the good qualities of several persons that one has known, or project a journey that one has never taken by uniting in a new way certain elements in one's memories of former journeys. The ability to recall experience in the form of ideas is obviously of very great value, for it enables one to "size up" situations or solve problems in the light of earlier experiences with situations or problems of the same kind. But the ability to construct ideas from elements chosen from different

years in Harvard University in company with George H. Palmer, Josiah Royce, and other brilliant students of philosophy. In addition to his *Principles of Psychology*, published in 1890, he put forth in 1899 a delightful series of addresses, *Talks to Teachers on Psychology, and to Students on Some of Life's Ideals*, which has already been listed among the recommended references for our readers.

experiences is of even larger value, for this ability makes it possible for one to take elements of one's own experience and put them together so that they will represent the experiences of others or even the great group of experiences of the race. (Recall the discussion of "vicarious" experience in earlier chapters.) This constructive ability also makes possible an intelligent *adaptation* of past experience to *new* situations and problems. (Recall the forward-looking capacity of mind as discussed in Chapter VI.)

Illustrations of the distinction between the "skill" and "knowledge" outcomes. — This distinction is of paramount importance in teaching. In the old-time school the only kind of learning that found a place was memoriter mastery, — "learning by heart," — which really meant reducing everything to an automatic or "habit" basis. This kind of learning is still absolutely necessary in the "skill" subjects; it has a limited place in the "knowledge" subjects, but this place is far less important than the old-time teachers believed. Here the emphasis should be upon *rational* mastery rather than upon mechanical mastery, upon *understanding* or *comprehension* rather than upon *memorization.*

"Knowledge" elements in the study of hygiene. — We have already suggested that habit-forming is important in certain phases of the study of hygiene; but it is also important to leave with the learner broad and comprehensive principles which will serve as a guide to his conduct in situations that we cannot foresee or for which we cannot equip him with completely formed habit-responses. He should have specific habits of cleanli-

ness, but he should also *know* why cleanliness is significant and what his habits do for him. Definite *ideas* or accurate *meanings* should be associated in his mind with such terms as "disease," "bacteria," "resistance." He should *understand* that certain diseases are caused by bacteria and that bacteria can be killed or rendered innocuous by such agencies as sunlight and oxygen and chemical disinfectants. This knowledge represents only one of the many large and comprehensive *principles* with which the science of health is concerned, but it illustrates what is meant by a "principle," and it suggests the importance of these comprehensive principles as outcomes of teaching and learning.

Geography as a "knowledge" subject. — In the early days of elementary education, the study of geography meant memorizing the names of countries and their boundaries; cities and their locations; states and their capitals; rivers and mountain ranges; oceans, seas, gulfs, and bays; capes and peninsulas. Successful learning meant *skill* in glibly reciting these often purely mechanical associations. Some work of this sort is still necessary to a mastery of geography, but the teacher of to-day aims to go much farther than this, and to leave with his pupils an *understanding* of the laws that govern climate; the *meaning* of rivers, oceans, lakes, and mountains in terms of their influence upon human life through promoting or retarding easy communication; the *principles* that determine the location of cities; the *reasons* why the great trade-routes developed as they did.

"Knowledge" outcomes in education for citizenship. — Certain habits and skills are proper outcomes of the

study of civics. Children should have some practice in school in what may be termed the mechanics of transacting public business. They should learn through their own clubs and societies how to organize and conduct public meetings; how to elect officers; how to observe the proper formalities in addressing the chairman and in debating with their fellows. Practice likewise should certainly be afforded in some of the activities that make for community cleanliness and health. Important as they are, however, these items of habit and skill are probably less significant as outcomes of school education than is an *understanding* of the *principles* that underlie good government and good citizenship, and the *meaning* of such terms as "democracy" "representative government," a "public trust," and the like. Even an understanding of these principles is probably less important than another group of outcomes that we shall discuss a little later.

"Knowledge" elements in arithmetic. — We suggested in a preceding paragraph that the "basic elements" of arithmetic belong primarily to the group of "skill" subjects. There are, however, numerous topics in arithmetic the desired outcomes of which partake far more of the nature of knowledge than of the nature of skill. While everyone needs a "letter-perfect" mastery of the fundamental processes, — addition, subtraction, multiplication, and division, — and reasonable facility in manipulating common and decimal fractions, the more important tables of denominate numbers, and the operations of percentage and interest, many of the applications of arithmetic are of chief importance in elemen-

tary education because of the insight or knowledge that they furnish regarding the way in which the world's business is transacted. Thus such topics as taxes, insurance, banking, partnerships, and "stocks and bonds" need not and should not be treated in the same way as are the basic skill elements. Understanding is the significant factor here, not mechanical mastery.

Some provisional definitions. — We have used the terms *idea, concept, meaning, fact, principle,* and *law* as representing adaptive outcomes of teaching and learning, but we have not yet tried to define these terms in a formal way, preferring to let their meaning come first through the context and through the contrast that we have drawn between "skill" outcomes and "knowledge" outcomes. By way of summary certain provisional definitions will now be attempted.

Ideas, concepts, and meanings. — For our purposes, the terms idea, concept, and meaning may be thought of as fairly synonymous. While, strictly speaking, every recalled experience is an idea, the use of the word in educational discussions is usually limited to those conscious controls of conduct that have been built up or "abstracted" from several experiences. These are usually attached to words or other symbols, and if the student will think of the meaning that he or she attaches to such words as "government," "democracy," "religion," "honesty," and the like, the essential characteristics of the term idea will probably be clearer than a formal definition could make them. (We choose these rather abstract terms because such words as "table," "chair," "dog," and "window" usually suggest concrete images of par-

ticular objects.) The essential characteristic of an idea is not the concrete imagery in which it manifests itself, but rather the meaning that it has for conduct. An idea is, indeed, a bundle of "cues" for conduct. In this sense it is quite synonymous with the terms "meaning" and "concept."

Professor Bode explains these terms as follows:[1]

> "In general, a meaning is anything that is suggested, pointed to, or indicated by something else. The noise in the street means street car, the cloud of smoke means a fire, the falling leaves mean the approach of winter. But human beings have the capacity of detaching the thing thus suggested or indicated and treating it independently, apart from the specific setting or context. A child on the roof of a house suggests falling, but the falling can be disengaged from its concrete setting and made a subject of independent interest, as when we study falling bodies in order to determine the law of momentum or acceleration. In much the same way we detach meanings when we study school systems, or soil composition, or business organization. . . . , the result being that we can talk about these topics without necessarily referring to any specific instance. When a suggested thing, a meaning, is thus detached and provided with a name, it is called a concept. Our concepts may have a great wealth of content, so that they are applicable to a wide range of cases; in fact, the great advantage of detaching meanings in this way is that they become more readily available for use in a variety of situations."

"Facts," "principles," "hypotheses," and "laws." — For our purposes, the terms "fact" and "principle" may be thought of as *formulations* of discovered relationships between ideas. "The world is round like a ball" formulates the discovered relationship between the idea

[1] B. H. Bode: *Fundamentals of Education*, p. 152. Macmillan, 1921. (For other references to Dr. Bode's work, see footnote, p. 131.)

"world" and the idea of a "ball." The line between facts and principles cannot be sharply drawn, but the term "fact" is usually employed to cover *single* or *particular* relationships, while the term "principle" represents sweeping or *general* relationships, — relationships which are *universal* in the sense that they hold true of all facts of the same class. Such general relationships or "generalizations" when proved to be universal in their scope and application, are called "laws." If they are not clearly established as laws but still seem to be universal, they are termed "hypotheses" or "theories." Thus the principle of gravitation is usually accepted as firmly established and is properly referred to as the "law" of gravitation; the principle of natural selection as the prime factor in the evolution of life is still an "hypothesis."

It is well for the student of education to discriminate carefully between statements that represent well-established laws and statements that are only plausible but still unproved hypotheses. Education deals with social and psychological problems of very intricate character, and the thoroughly established laws in the fields of sociology and psychology are few in number. Almost inevitably writers and speakers will set forth statements that appear to have universal validity, but which on analysis prove to be but plausible hypotheses, or even express relationships that are true only in exceptional cases. The reader of this book has doubtless been somewhat irritated by the frequency with which qualifying words and phrases occur,—"perhaps," "probably," "apparently," "it seems," "some people believe," and the like. No writer wishes to use terms that indicate uncertainty, and yet in a field such as ours this practice is often necessary. Even after the caution that has been exercised, the student will doubtless discover several instances of general statements which should have been qualified.

The teaching of meanings, facts, and principles. — To equip the learner with an adequate store of meanings, facts, and principles, — in short, to equip him with knowledge as distinguished from habits and skills, — is far from an easy task. To get the learner to understand or comprehend what one tries to teach is difficult enough, but good teaching cannot stop here. The large problem in connection with "instruction" (as distinguished from "training," or habit-building) is to make knowledge *dynamic*, — to teach in such a way that what is learned will not only be understood, but also *recalled* and *applied* when needed in facing and solving the problems of life.

The facts of individual differences in learning-capacity which were discussed in Chapter VI become of large import in this connection.[1] To quote Professor Bode again:

> "Whether any individual can apply the meanings or concepts which he has already acquired when he is confronted with a new situation is, to a considerable extent, no doubt, a question of native ability. Newton, for example, was able to apply the familiar concept of 'falling body' to the motion of the moon, because he was able to see the resemblance between this motion and the falling of the apple. His previous training had furnished him with some information about falling bodies and about the components of a circular motion, but for the application of this knowledge he was left to his own devices. . . .
>
> ". . . No amount of training can convert dullness into genius, and if the individual is too slow-witted or too much upset by the emergency to use his own resources, this fact can hardly be blamed

[1] In Chapter VIII, "general intelligence" was identified with capacity to learn. It is well to point out here that some psychologists believe that the ability to deal with abstractions (with very large and comprehensive ideas and concepts) is the true criterion of "intelligence." According to this view, a marked ability to apply general principles to concrete situations would indicate a high degree of intelligence.

on education. But, unfortunately, the failure to apply previous training to the new situation may be due to the character of the training. If the concepts are mainly verbal, too empty to furnish suggestions, then education must assume the responsibility. James's story of his struggle with his student lamp is a case in point. The lamp would not burn properly, and it was only by accident that he discovered the remedy, which consisted in propping up the chimney so as to let in more air. James had doubtless studied the theory of combustion in physics, but in spite of that fact the flickering lamp suggested nothing whatever to him. The theory was for him just 'book learning,' which could not be converted into practice." [1]

Some of the most important developments in the technique of teaching during the past thirty years have been directed toward the solution of this problem of having knowledge mastered in such a way that it will be a dynamic force in the life of the learner, — in such a way that it will actually fulfill its function in enabling him to adapt himself more effectively to the situations that he meets. These developments will be studied by the prospective teacher in the succeeding stages of his professional education. In this introductory book only an initial orientation can be attempted.

Exposition vs. *development in teaching.* — An important step in insuring a dynamic mastery of facts and principles is to encourage the learner to discover some of them for himself, and then to encourage him likewise to look for ways in which they can be used or applied. Thus the modern school has laid much emphasis upon teaching by *development* as contrasted with teaching by *exposition.*

[1] B. H. Bode, *op. cit.*, pp. 156 f.

For example, in teaching the parts of speech and their relationships, one may proceed by setting forth definitions of nouns, verbs, adjectives, and adverbs, illustrating each definition carefully by appropriate sentences, explaining the various forms or inflections in which the parts of speech appear, and finally formulating the rules of syntax which govern the relationships, and a mastery of which, the teacher hopes, may enable his pupils to speak and write correctly. A clear, logical, well-illustrated exposition of this sort may be successful with some pupils. It is now regarded as a much better practice, however, to have the learner himself work with the materials of language under the guidance of the teacher; make his own definitions after a study and analysis of typical sentences; discover for himself the way in which good writers use the inflected word-forms; and formulate simple rules that will generalize what he has learned.

Teaching by such a process of development obviously consumes more time than teaching by systematic and logical exposition, but it is believed to insure far better results, and the testimony of good teachers is strongly in its favor, — although very few would contend that everything should be taught through development and that there is no place for clear-cut logical exposition.

Developmental lessons. — The teaching-technique which aims thus to encourage the learner to formulate rules or principles on the basis of his own study of particular cases and to search for applications of these principles has been formulated in two types of "developmental lessons."

(1) "Inductive development." — The "Inductive Lesson" has as its objective the clear understanding of a principle (rule, definition, generalization) based upon the careful study of particular facts. The lesson is divided into stages or steps, five in number, which were

worked out by the followers of Herbart,[1] and are sometimes referred to as the "formal steps of the recitation." They may be briefly described as follows:

Step I. *Preparation:* One of Herbart's lasting contributions to educational theory was his recognition of the fact that new knowledge can be comprehended or understood only when brought into a definite relation with what is already known. This is his famous principle of "apperception," which means the interpretation of the new in the light of one's experience. The followers of Herbart, in working out a technique of teaching new knowledge, placed as the first step in the process the recall or revival or "review" of the knowledge possessed by the learner that would help him in understanding the new knowledge. For example, if one has already studied nouns and comes now to a first acquaintance with adjectives, it is well as a preliminary to the study of adjectives to review briefly what is known of nouns. Either at the beginning of this step of "preparation" or at its close the Herbartian writers recommended that the *aim* or purpose of the new lesson be carefully explained to the class.

Step II. *Presentation:* This basis having been laid, the next task of the teacher is to set before the class the concrete or particular cases that they are to study as a basis for drawing conclusions and formulating a generalization. In the lesson on the adjective this might well be a group of words modifying the noun. Under the supposition that the pupils are already familiar with nouns and verbs, the attention naturally falls on the new part of speech.

Step III. *Comparison and abstraction*: By comparing the new elements in the sentences with the elements already known, some of the characteristics of the former may be made to stand out in sharp relief. The skill of the teacher lies chiefly in his ability to get the

[1] Johann Friedrich Herbart (1776–1841) was one of the most influential of modern students of educational theory. His clear recognition of the significance of interest to learning was an important factor in breaking up the barren formalism of the old-time school. He established a "Pedagogical Seminary" at the University of Königsberg in East Prussia, but his teachings were not viewed with favor by the Prussian government, and his Seminary was discontinued in 1833. In addition to his contributions to educational theory, Herbart is recognized as one of the founders of modern psychology.

pupils to see these characteristics for themselves, — to *discover* them. Omitting the adjectives makes a difference in the meaning of the nouns. Once this is detected, the essential nature of the adjective as a noun "changer" or "modifier" is not difficult to grasp. This mental "grasping" of an element common to a number of particular cases is known as the process of "abstraction."

Step IV. *Generalization:* With the common elements abstracted through comparing the particular cases with one another and with related older knowledge, the generalization or formulation of these elements will follow as a matter of course. The theory of developmental teaching lays large emphasis upon the learner's own formulation, even if the definition or principle thus derived be crude and inadequate. It can be, and of course should be, refined and reworded before the work with it is completed, but the initial effort of the learner to state as clearly as he can the principle that he has discovered or the distinction that he has defined is far from an unimportant part of the process.

Step V. *Application:* If the principle or the definition has been worth the time and trouble consumed in its development and formulation, it is certainly worth a little more time and effort to give practice in its application. As a result of developing the definition of the adjective, for example, the pupils may be directed to find all the adjectives that they can in a new group of sentences, and to explain in each case why they are adjectives. Thus, beginning with the concrete and particular, they pass to the abstract and general, and finally come back once more to the concrete and particular, — but now newly equipped to solve its problems.

The refinement of the technique[1] involved in the inductive developmental lesson was an important forward step in the art of teaching. Like other suggestions for

[1] Among the followers of Herbart who contributed to this refinement were in Germany, Tuiskon Ziller (1817–1882), and Wilhelm Rein (born 1847); in England, John Adams (born 1857), for many years a professor in the University of London, England; and in America, Frank M. McMurry (see note, p. 205); his brother, Charles A. McMurry (born 1857), for several years director of training in the Northern Illinois Teachers College, now a professor in the Peabody Teachers College, Nashville, Tennessee; and Charles De Garmo (born 1849), from 1898 to 1914 a professor in Cornell University.

the improvement of teaching, however, its virtues were exaggerated in the sense that it was assumed to have a field of application far more extensive than rightly belonged to it. Within a limited range, the "formal steps" have a very large value, and it is to be regretted that this value was somewhat obscured by the assumption that they constituted a "general method" of teaching, a mastery of which by the young teacher would solve most of his problems. This assumption could not be substantiated and as a result the procedure itself tended to be discredited.

(2) "Deductive development." — Another technique, suggested by and analogous to the Inductive Lesson, is known as the Deductive Lesson. This is really an expansion of Step V ("Application") of the Inductive Lesson, and was designed still further to emphasize the application of principles to the solution of particular problems,[1] although it was used long before the Inductive Lesson was formulated.

The emphasis of the problem in teaching. — Through emphasis on developmental lessons, an important factor in effective teaching and learning emerged gradually into high relief. The value of presenting the materials of education in the context of their application came more and more clearly to be recognized. It had long been known, of course, that subjects of study which could be easily organized into a series of "problems" were, as a rule, better taught and better mastered than were sub-

[1] Illustrations of the Deductive Lesson may be found in Miss Lida B. Earhart's *Types of Teaching* (Houghton Mifflin, 1915, ch. vi), G. D. Strayer's *A Brief Course in the Teaching Process* (Macmillan, 1911, ch. vi), and W. C. Bagley's *The Educative Process* (Macmillan, 1905, ch. xxvi).

jects of study that lacked this advantage. Mathematics and foreign languages are subjects which lend themselves readily to this "problematic" presentation, and the use of the problem and the problematic exercise in the working of "examples" in arithmetic and algebra, in the solution of "originals" in geometry, and in the very definite problem work in translating, analyzing, and parsing, has been emphasized almost from the outset in the teaching of these subjects. The development of the Herbartian pedagogy, especially the emphasis given in the formal steps to stating clearly the aim or problem of the lesson, suggested the extension of "teaching through problems" to other fields. A powerful stimulus to this extension came also from the work of John Dewey,[1] who, early in the present century, set forth the great value of basing instruction upon the actual, *present* needs of children rather than exclusively upon their future needs. (See p. 41.) He contended that the school is not only a preparation for life but also life itself, and that the child can be best prepared for adulthood by teaching him how to solve the immediate problems that arise in his own child-world.

The project method. — An important and far-reaching result of this emphasis of the problem in teaching and learning has been the development of the "project method." It is in this method that the theories of education advanced by Dewey have found their clearest expression.

To teach through "projects" means, in essence, to bring knowledge and skill to the learner through the

[1] See footnote, p. 41.

medium of problems for which he earnestly desires a solution. Lest the term "problem" be too narrowly conceived, the writers[1] that have most closely followed Dr. Dewey's teachings prefer to use the term "purpose" and refer to the essential characteristic of learning through projects as "purposeful activity." Other writers[2] give the larger emphasis to the "natural setting" as the essential characteristics of a project. They distinguish sharply between such problems as those represented by the "examples" of arithmetic and algebra, and the "real" problems of actual life such as those that the farmer, the mechanic, the business man, and the housewife must meet and solve. Only when problems of the latter type become centers about which to organize skills and ideas, these writers contend, is one truly applying the "project method" of teaching.

From either of the points of view, however, the important feature of project-teaching lies in the attempt to make skill and knowledge dynamic from the outset. The materials of education are taught and learned in their immediate application to the solution of real problems or the realization of whole-hearted purposes. The contrast with the older methods of teaching and learn-

[1] The leading exponent of the conception of project teaching which emphasizes "purposeful activity" is William Heard Kilpatrick (born 1871), since 1911 a professor of education in Teachers College, New York City, and widely known as a teacher. He defines the project as a "whole-hearted, purposeful activity proceeding in a social environment, or more briefly . . the unit element of such activity, the hearty purposeful act."

[2] For example, W. W. Charters (see footnote, p. 217). His definition of the project ("An act carried to completion in its natural setting and involving the solution of a relatively complex problem") has been developed and richly illustrated by John A. Stevenson in his book, *The Project Method of Teaching*, Macmillan, 1921.

ing is sharp, clear, and unequivocal at this point. It may be illustrated diagrammatically as follows:

I. Project-Teaching

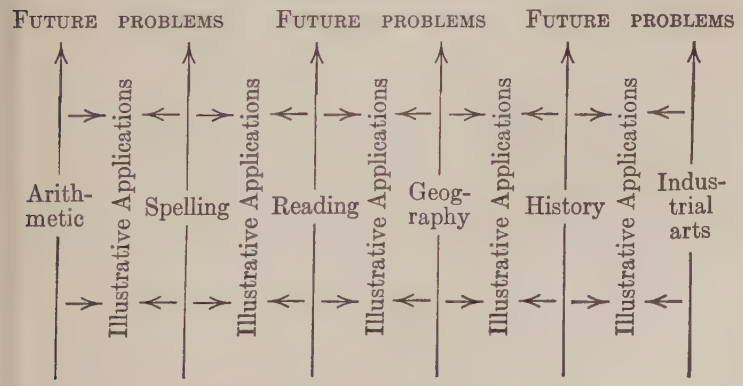
Immediate Problem or Purpose

Items of skill or knowledge necessary to solve problem or realize purpose.

Items of:		Items of:
Arithmetic	→	← *Hygiene*
Reading	→	← *Civics*
Geography	→	← *Industrial arts*
Literature	→	← *Fine arts*
History	→	← *Science*

The problem or purpose, for example, may be represented by a keen desire on the part of a group of pupils to present a dramatization of the signing of the Mayflower compact. To carry through a project of this sort will obviously involve: (1) a careful study of historical sources to determine what events to reproduce and how to reproduce them; (2) a study of related facts of geography; (3) measurements and computations involved in the construction of stage-settings and costumes; (4) practice in the industrial arts in making stage-settings and costumes; (5) writing, spelling, and composition in the construction of the scenario; (6) practice in reading and speaking.

II. Systematic Teaching



The second part of the diagram represents the various subjects of study organized and taught each in accordance with its own internal system, and with reference not to immediate values or applications but to "deferred values" or adult applications. Frequent efforts are made, however, to illustrate possible applications and values through practice in school problems or references to situations in actual out-of-school life.

Different views as to the place of project-teaching. — A very important question in educational theory and practice to-day is the extent to which the organization of materials on a project basis should replace the systematic organization. It is maintained by certain students of the problem that *all* of the skill and knowledge that one needs may be learned in close connection with projects and purposes, — that the art of teaching at its best consists in seizing upon the dominant problems and purposes of the learner and then bringing in the items of skill and knowledge that will solve these problems and realize these purposes. Others would use the project organization extensively in the lower grades, supplementing it gradually with systematic study as the child advances to the higher grades. Still others see in the project method a valuable means of supplementing or complementing systematic teaching and learning at all stages of school life. While it is as yet too early to take toward this important question anything more than an open-minded attitude, the student of teaching will do well to keep closely in touch with the development that is now going on so rapidly and to make sure that he or she has at least an initial mastery of both the older and the newer procedures.

C. Ideals as Adaptive Outcomes of Teaching and Learning

The distinction between ideas and ideals. — Ideas, concepts, and meanings were considered in the preceding section as practically synonymous terms, and were defined as bundles of "cues" for conduct, — conscious "controls" which may serve to guide conduct when one faces situations for which a mechanized habit-response has not been developed. An "ideal" as this term is used in educational discussions may well be thought of as a *master-idea,* — a much more comprehensive control which determines large patterns of conduct. It is further differentiated from an idea by being surcharged, so to speak, not only with *meaning* but with *worth;* it reflects something that appeals to one as of outstanding *value;* it has an *emotional* as well as an *intellectual* basis; it is *appreciated* as well as *understood* and *comprehended.*

Illustrations of the distinction. — It will be recalled that ideas, concepts, and meanings are crystallized in and expressed by words. Words may likewise crystallize and express ideals, and by contrasting idea-words and ideal-words, the student may form for himself a fairly clear "idea" of an "ideal." Let us take the word "temperance" for example. As this word is used in everyday discussion it has a definite and well-understood *meaning.* "He had temperate habits"; "We attended a lecture on temperance"; "John B. Gough was a leader of the temperance movement"; — even a person who is most intemperate in his alcoholic indulgences may *understand* or *comprehend* the *meaning* of the term

"temperance" as thus used. In other words, *one may have a perfectly clear idea without being possessed of the corresponding ideal.* One may even use the idea in adjusting one's self to situations in life without making the idea a goal to be striven toward, or a rigorous standard for determining what one should or should not do. When an *idea* becomes such a goal or standard, it has taken on the essential characteristic of an *ideal.*

Again, consider the word "Union" as this is applied to the federation of American states. The Constitution was adopted, among other reasons, in order to establish "a more perfect union." The *idea* of union was even then well understood or comprehended; the immediate desirability of a larger measure of unity among the thirteen states was clearly recognized; to some, even at the very outset, a thoroughgoing union was an ideal in the sense of a goal to be worked toward; but it required nearly three generations of struggle and effort culminating in a great civil war to enthrone national unity as a fundamental ideal possessed by all of the people.

Consider another illustration: A high school boy is trying to decide upon an occupation. He takes a course in "vocational guidance." One by one the principal fields of work are set before him. As he studies them he gains relatively clear *ideas* of each. He learns what the various occupations demand in the way of innate abilities; what training is required; what rewards each offers; what opportunities for growth each provides; what dangers to life and health each involves; what the chances of seasonal unemployment will be in each;

and so on. Gradually, it may be, one group of occupations comes to stand out above the rest as, to him, the most desirable. He talks the matter over with his parents and his teachers, and finally makes a firm decision. He decides to be a farmer, a carpenter, a lawyer, or a merchant. Out of the ideas that he has built up, then, a lasting *ideal* has emerged.

Or it may be that this boy has a more general ideal from the very outset. He intensely desires to be a rich man, and he studies the range of occupations to find those that will promise best to make him wealthy. In this case, the knowledge that he gains of the various occupations is a means to an end. His *ideal* has already been formed; he now builds up ideas that will help him toward the realization of his ideal. In the same way, he may have a desire to be "successful" or — far better — he may have firmly established the ideal of rendering the best service to his fellows.

Two important types of ideals. — From the above illustrations, it is clear that there are two large groups of ideals: (*a*) *terminal* ideals, which we designate in everyday language as "ambitions," broad "aims," comprehensive "purposes," and the like; and (*b*) *regulative* ideals, which are frequently spoken of as "standards of conduct," "moral standards," or "virtues."

The significance of this distinction will be apparent from a simple illustration. The boy's desire to become wealthy represents a *terminal* ideal. It is a broad and comprehensive purpose projected into the future. Let us assume that this ideal really possesses him to the extent that he is willing and anxious to put forth every

effort to attain the projected end. As to whether this is a worthy or an unworthy ideal, opinions will differ, but all will agree that its realization may be sought by unworthy methods. It becomes a most important matter whether the individual will resort to avarice, exploitation, and even downright dishonesty, or whether he will hold his ambition within the standards of fair-play, scrupulous honesty, and a decent regard for the rights of others. The latter qualities exemplify *regulative* ideals; they regulate conduct in that they set certain limits within the boundaries of which terminal ideals are to be sought.

The significance of ideals as outcomes of teaching and learning. — Probably no work that the school attempts is so important as that which is involved in its efforts to establish worthy ideals. By their very nature, of course, terminal ideals are largely individual in their character, but good teachers can and do exert a large influence in determining whether the ambitions or broad life-purposes of their pupils and students are worthy; — they can, in other words, do much to make the learner self-critical of his or her ambitions.

There are, too, certain types of terminal ideals that govern the conduct of peoples and nations, and here the influence of the school is unquestioned. Germany's ambition to secure a "place in the sun" was deliberately inculcated by German schools and German teachers. Indeed, wherever great national systems of universal education have been developed, the use of the school to inculcate national ideals has been both general and effective. The very efficacy of the procedure suggests

at once the serious responsibility that rests upon those who determine the policies of the schools to insure that the national aspirations encouraged by educative agencies shall be worthy and not unworthy. In a very real sense, the future of the world depends upon the teachers who, in each nation, have the duty of inculcating ideals in the hearts and minds of the great masses of the people.[1]

In the development of *regulative* ideals, the school has a clearly recognized field. To insure that its product shall be possessed of worthy dynamic standards, such as honesty, industry, personal cleanliness, a respect for law, and a willingness to help others, is an objective with which no one will quarrel. It is a simple matter to formulate the objective, but it is quite another to realize it in actual practice.

The teaching of ideals. — Relatively definite methods or patterns of teaching, as we have seen, are available to the teacher who seeks the two types of outcomes previously discussed (the habit-and-skill outcomes and the knowledge outcomes); and in these fields, too, it is now possible with a reasonable degree of accuracy to measure the degree in which the desired outcomes have

[1] *Cf.* the discussion of the teaching of history, pp. 79 ff. above. A very important question arises here as to the extent to which the ideals to be inculcated shall be in the choice of the teachers themselves. In Germany, prior to the Great War, the teachers had essentially no choice. They were only cogs in a great machinery of indoctrination. In our own country, while there are innumerable partisan groups that are attempting to control this powerful force of universal education, the collective judgment of the teachers themselves has at least a chance to be heard. With this opportunity there rests upon the teaching profession a corresponding responsibility to formulate with the utmost care the policies that it would propose, and to put these policies before the people with a force and a cogency that will carry conviction. The recent development of professional organizations for teachers (see ch. xi below) will doubtless reap its richest harvest in this connection.

been attained. But when one approaches the more difficult task of establishing dynamic ideals and dependable standards, the suggestions as to procedure are far less definite, and objective measures of the results of teaching are almost entirely lacking. This is far from saying, however, that the problem has not been very seriously considered, or that progress has not been made toward its solution. Some of the more important theories that have been proposed as provisional guides for educational practice in this field may be briefly referred to here.

Ideals as direct and as concomitant outcomes. — It is generally agreed that ideals may be impressed or developed either as direct outcomes of teaching and learning or as indirect or "concomitant" outcomes. Almost everyone will be able to recall one or two occasions in his or her life when a great awakening came, when a new standard or a new aspiration suddenly assumed a position of dominance, and when the whole trend of life was transformed. A frequent phenomenon of this type is represented by religious conversion, but some who have never "experienced" religion in this way have had analogous experiences. They have responded to some deep and fundamental note in a sermon or a lecture; they have been inspired by a great novel or a powerful drama; they have gained a new access of strength and power from a song or a symphony; from a great picture they have caught something of the vision of the artist; more frequently perhaps the inspiration has come in a more personal and intimate way from the direct influence of a "strong personality." From the point of view

or our present discussion, the important fact is that this direct and immediate implanting of an ideal is not only possible but sometimes tremendously effective.

We all recognize, however, that strong and pervasive ideals may develop much more slowly and as a result of experiences that have not been explicitly directed toward this end, — that they may, indeed, be indirect or concomitant (accompanying) outcomes of learning-experiences the direct outcomes of which are of a quite different character. In the learning of reading, arithmetic, spelling, and other school subjects, for example, the learner may also be acquiring at the same time life-long standards and ideals of industry, thrift, self-reliance, accuracy, application, and persistence, — or just as certainly he may be acquiring life-long standards of a negative or unworthy sort, such as indolence, "getting by" with least effort, dependence upon others, and dishonesty. Not only in the school, but at home, on the playground, on the street, wherever he may be, ideals and standards either worthy or unworthy are constantly being exemplified and these will inevitably be taken up, literally "absorbed," by large numbers of children. To recognize all possible sources of ideals, to utilize those that yield worthy ideals, and to counteract the influences that are negative or degrading, are obvious and yet most difficult duties of education.

The lesson in appreciation as a means of engendering ideals directly. — As we have seen, literature and the other fine arts are among the most important agencies that the school can use for the direct inculcation of ideals. The problem in teaching these subjects is two-

fold: (*a*) to develop standards of selection, or — as it is usually phrased — to develop a "taste" or "liking" for good literature, good music, and good pictures; and (*b*) through this to insure an appreciation of the great ideals which art at its best reveals. Something in the way of a definite pattern or technique for teaching in this field has been formulated as the "lesson in appreciation."[1]

A detailed treatment of the lesson in appreciation[2] will be found in a book by that name written by Dr. F. H. Hayward, of London. Dr. Hayward maintains that the introduction of the learner to a great masterpiece of literature or art should be a "great event" in the learner's life, — as he terms it, a "Red-letter" lesson. He furnishes a wealth of practical suggestions for making such a lesson a great event, emphasizing the importance of preparing the "mind and the mood" of the learner far in advance by clearing up the difficulties that would otherwise stand in the way of full enjoyment and appreciation; taking care that the necessary foundation of information has been well laid; arousing an anticipatory interest by suggesting now and again that something important will soon happen; taking due precautions lest distractions will come in to break the "magic spell" at the appointed hour; in short, making every possible effort to insure a dramatic effect that will make the lesson stand out sharp and strong and clear, — something for the learner to look back upon in later years as one of the events of his school life.

While Dr. Hayward's suggestions refer primarily to the teaching of literature and the other fine arts, the suggestion of the Red-letter lesson can be applied in almost every subject of instruction. The initial acquaintance of the learner with a great event or movement in history, with a great discovery of science, or with a great invention

[1] The importance of recognizing a distinct group of school exercises or lessons devoted to the problem of insuring appreciation was recognized at about the same time by George D. Strayer (see footnote, p. 303). and by J. J. Findlay of the University of Manchester, England.

[2] F. H. Hayward: *The Lesson in Appreciation.* Macmillan, 1913.

in the field of the practical arts may well be made in a manner that befits the significance of the materials with which the lesson deals.

The phase of "teaching for appreciation" in which the greatest progress has probably been made is that which has to do with story-telling in the primary grades. Materials in abundance are now available for work of this sort, and several helpful books on the technique of story-telling have been published.

Ideals and standards as concomitant outcomes of the more recent developments in the art of teaching. — The "socialized recitation" and the "project method" have already been mentioned, — the first as one means of adapting materials to the varying capacities of different individuals, the second as a means of bringing knowledge and skill to the learner in the context of their actual application to real problems (pp. 231 ff.; pp. 237 ff.). It should be said here, however, that both of these developments have made a strong appeal to the progressive teacher because of the opportunities that they afford for the inculcation of ideals and standards as concomitant outcomes of learning. They had their origin, indeed, in the tendency of the older forms of class organization and the older methods of teaching to engender the unworthy concomitant outcomes to which reference was made in the preceding section.

D. Attitudes as Relatively Fixed Outcomes of Teaching and Learning

The nature and types of attitude. — Attitudes are frequently mentioned in connection with ideals as important outcomes of teaching and learning. It is a familiar fact

that the way in which one interprets a situation and reacts to it is often determined by one's "point of view," one's "mental set," one's "perspective on the problem." A person who has grown up in the Southern states, for example, is likely to have an attitude toward the race problem that is quite different from that of a person who has grown up in the Northern states. Sometimes these attitudes are so deeply seated that any proposal that is at all inconsistent with one of them is met by an immediate emotional response which quite prevents a calm consideration of the proposal and a reasoned judgment concerning its merits. Because action or decision in such cases is likely to come before judgment, the person is said to be "prejudiced" or to have a "prejudice." Less violent in their manifestations but none the less immediate in their effects are the "tastes" that one has developed. To the trained musician, the bungling and awkward performance of the amateur is irritating; to the painter, a lack of harmony in color combinations or a lack of balance in design is unpleasant or even painful; vulgar speech disgusts those who have been accustomed to decent and refined standards of expression. These fundamental attitudes have a positive as well as a negative influence: one is likely to accept very willingly proposals that fit in with one's points of view or one's prejudices; we readily "see the truth" in arguments that confirm our own beliefs and pet theories; the "appeal to prejudice" is easily the most popular form of public address.

It is obvious that attitudes as exemplified in the illustrations just given are powerful "controls" of conduct,

but just what they represent psychologically is not as yet clearly understood. They have many resemblances to habits; indeed, in everyday speech they are often referred to as "general habits." For many reasons, however, it is best to limit the term "habit" to the specific connections between stimuli and responses that were discussed in an earlier section (see pp. 213 ff.), and to think of attitudes as representing the much larger and more comprehensive outcomes not only of teaching and learning in the narrower sense, but of experience in the very widest sense.

The genesis of attitudes. — Even if we are uncertain as to the precise nature of attitudes, it is possible to say something about the way in which they come into existence, and from the point of view of education this is perhaps more important than a precise definition of them would be.

The significance of early training. — There can be no question that the early experiences of children and the early training to which they are subjected form a most significant source of the attitudes, points of view, tastes, and prejudices that will have a determining influence in their later lives. This is, of course, no new discovery; it is a belief that has been widely held and more or less intelligently acted upon for centuries; but it has recently received an overwhelming confirmation from scientific investigation in the field known as psychoanalysis. All experiences may be educative in the sense that they modify conduct in some measure, but the early experiences of childhood are formative and fundamental in the highest degree. A clear corollary from this principle is

that the educative influences of the home and of the earlier school years transcend all others in their importance.

Attitudes as outcomes of the "life of the school." — From the point of view of the development of attitudes, the "life" of school as distinguished from its program of studies has a very large significance. (See pp. 125 ff.) This principle has also been recognized for a long time. Indeed, the emphasis upon school life has probably been the chief factor in the unquestioned influence of the great secondary schools of England, such as Eton, Harrow, Rugby, and Winchester. In our own country there are conspicuous examples of the same influence among some of the private and endowed "boarding-schools" of secondary grade, and more notably in the United States Military and Naval academies at West Point and Annapolis. Such schools have an advantage over most of our public elementary and secondary schools in that the entire life of the pupils and students is under institutional control during the school year. This advantage cannot be duplicated in day-schools, but a great deal has been done to overcome this handicap in some measure through an intelligent development of what are termed "extra-curricular activities," — athletics; clubs and societies for debating, nature study, "dramatics," and the like; the Boy Scouts and Girl Scouts; the Junior Red Cross; pupil and student publications; school parties, excursions, and exhibits; and the various forms of student self-government.

The school studies as sources of attitudes. — It should not be concluded, however, that the school studies them-

selves have no influence on these fundamental forces that we have called attitudes. If by the skillful teaching of literature, we can develop a dynamic ideal, we may be tolerably certain that this ideal through repeated conscious application will work over into a comprehensive and persistent attitude. Standards of worth developed in the study of music will through their repeated application sooner or later develop the kind of attitude that we have referred to as a "taste" for good music. Whatever is done, then, directly to engender ideals and standards may, under the right conditions, form the basis of these more fundamental controls of conduct. There is, too, clear evidence that persistent and systematic study will engender definite points of view and perspectives which will remain as important determinants of conduct long after many of the detailed facts mastered in such study have been forgotten. This is especially true of the study of history (see pp. 82 ff.), and it is highly probable that the systematic study of science has an analogous outcome. It has often been said that every experience leaves a "deposit," — that everything that one does exerts an influence upon one's later conduct. While this would be very difficult to prove, it doubtless reflects some measure of truth. If it be true of "real" or "actual" experience, we cannot escape the conclusion that it is also true of "vicarious" experience, and it is certainly true of the experience of learning considered apart from what is learned. Even if attitudes are difficult to define, their existence and their potency must be granted. They must assuredly be reckoned with in the process of education,

Summary; Educational Objectives and the Problems of Curriculum Construction

The importance of classifying outcomes as a basis for curriculum construction. — The terms that have been used in this chapter as designating different outcomes of teaching have a large place in educational discussions, and especially in the discussions of the "curriculum-problem" in the elementary and high schools. This problem in its various phases is being studied to-day as never before. It is recognized that many of the school subjects have developed in a haphazard fashion, often without a clear-cut understanding of the function that they were to discharge in the scheme of education. This does not mean that the mastery of these subjects has been without a large measure of value. It rather means that these values, in many cases, have not been clearly defined, and that teachers have consequently worked without having in mind definite objectives beyond seeing to it that pupils "passed" in the courses that they were taking.

The present tendency is rigorously to insist that these objectives be clearly and definitely formulated. The more recent curriculum studies set forth very specific ends that should be sought in terms of definite habits and skills to be mastered; specific facts and principles to be learned and applied; definite ideals to be appreciated; tastes, interests, points of view, and other attitudes to be established.

The determination of desirable outcomes. — Some very important pioneer work has been done, too, in

finding out what specific habits, skills, items of knowledge, ideals, and attitudes are likely to be most needed and most useful by all individuals (as a basis for universal general education) or by members of different occupational groups (as a basis for specialized and vocational curricula). Some of the more important methods that have been employed to this end will indicate the way in which this phase of educational investigation is being attacked.

Job analysis. — This method has been extensively employed in vocational education. A very good example is given by Dr. Charters in his book, *Curriculum Construction:* [1]

> "A formal job analysis. — A somewhat more formal sort of analysis is that which is known as the job analysis. Used at first in the vocations as a device in the employment offices of organizations which were too large for the employment officer to be familiar with the duties of all the jobs in the organization, it spread very rapidly and came to have its greatest usefulness and largest amount of publicity in connection with the Army during the World War. While its widest use in the vocations has been in connection with employment, its most valuable use is in connection with training programs.
>
> "Another example of the analysis of a simple job is that of the position of application clerk in a department store, which is given as follows:
>
> "1. Meets people who desire to open accounts.
> "2. Asks them for the information to fill out blank.
> "3. Writes form letters or telephones for references.
> "4. Fills out Mercantile Agency blanks.
> "5. Looks up rating in Dunn's, etc.
> "6. Files applications temporarily till references come in.

[1] Published by Macmillan, 1923. For reference to Dr. Charters's other contributions to educational science see footnote, p. 217.

"7. Makes notes of references on blanks and hands to Credit Chief, who passes on them.

"8. Enters name, address, and number of applications in index.

"9. Answers requests from other firms for references.

"In this table are shown nine duties which the application clerk has to perform, and clearly the course of study needed to train such a clerk will deal with the nine topics. It should teach him how to meet people who desire to open accounts, how to ask them for information with which to fill out blanks, how to write form letters, how to get information over the telephone, etc. When the student has been taught each of these topics according to ideals which would necessarily be included, all the theory needed by him has been presented."

A principle similar to that employed in job analysis is represented by Dr. Bobbitt's[1] proposal to base the curriculum of formal education upon the deficiencies or shortcomings that individuals reveal "after they have had all that can be gained by . . . undirected training." [2]

The analysis of current literature. — This has been used as a method of determining the information that one needs regarding persons, places, historical events, literary characters, and the like, if one is to read intelligently the literature of the day. The method yields some suggestive inferences regarding the materials that may be regarded as especially important in the study of such subjects as history, geography, and literature, but the results of the analysis must be very carefully interpreted if they are to be used with profit.[3]

[1] Franklin Bobbitt (born 1876) is one of the outstanding students of the curriculum problem. He has been since 1908 associated with Professor Judd in the School of Education of the University of Chicago.

[2] F. Bobbitt: *The Curriculum*, p. 41. Houghton Mifflin, 1918.

[3] Examples of the use of this method as applied to newspapers and magazines will be found in the *Fourteenth Yearbook* of the National Society for the Study of Education, Part II, 1915; and in the work of C. W. Washburne (see also footnote, p. 199) in the *Twenty-second Yearbook of* the society, 1923,

Analysis of official reports. — Dr. H. O. Rugg[1] has analyzed statistical reports to learn what facts of commercial and economic geography are of particular value in elementary education, and a related application of the same principle has been made by Dr. Horn in analyzing platforms of political parties to find what questions and issues are of persisting significance in political discussions.

Judgments of experts, and especially of "frontier thinkers." — A number of investigators have attempted to evaluate curriculum-materials by collecting and "averaging" the judgments of experts workers in various fields. In an early study, for example, the relative importance of twenty dates in American history was determined by having a number of competent historians "rank" the dates and by combining the rankings thus obtained. A most suggestive variation of the same principle was made by Dr. Rugg when he had a number of recognized "frontier thinkers" in the social sciences list the problems that each thought to represent the most important issues that the coming generation will have to face.

Limitations of the scientific study of the curriculum problem. — The methods briefly referred to above represent pioneer efforts in a very important and a very complicated field. These methods will doubtless be re-

ch. xiii. Another application of the method, this time applied to current books in the social studies, will be found in the chapters contributed to the *Sixteenth Yearbook* of the Society by Ernest Horn (born 1882), one of the most prominent students of the curriculum problem, and since 1913 a professor of education in the State University of Iowa.

[1] The work of Harold O. Rugg (born 1886) has been particularly noteworthy in the study of curriculum-materials for the social-science courses of the junior high school. Since 1919 he has been the psychologist of the Lincoln (experimental) School of New York City.

fined within the next decade and other methods will be discovered or invented. The result will be a large number of important facts concerning the materials of education that are most useful for given purposes. Rapid progress in this field can be confidently predicted.

On the other hand, there are obvious limitations to the objective methods which try to determine what the school may profitably teach by analyzing what people now do and thus finding out what equipment in the way of skills, knowledge, ideals, and attitudes they need in order to do these things well. This is important, but education must consider as well another problem — a problem that must be approached in a quite different way. It must ask not only how to help each generation to do well those things that in all likelihood it will have to do in any case; it must also ask whether there are not other things to do which are not being done now, and which in consequence no objective analysis could possibly discover. Science gives us facts, and facts as we have seen are of tremendous importance; but science in itself does not supply us with ideals, nor in a fundamental way does it teach us to choose among ideals. This is the particular task, not of the scientist, but of the philosopher, and hand in hand with a science of education must go a philosophy of education. As the late Dr. Colvin[1] said in discussing this problem of educational objectives:

"It is the business of a philosophy of education to evaluate human experience, and to discover those values most significant

[1] Stephen Sheldon Colvin (1868–1923) won marked distinction as a student of educational problems, particularly in the field of psychology and measurements. He was associated for many years with the University of Illinois,

in human attainment and progress. . . . Educational philosophy must act on its own initiative. It must act constructively."

Questions, Exercises, and Problems

1. Prepare a list of the important specific skills that you acquired before entering school. Make a supplementary list of the specific skills that the elementary school was instrumental in forming.

2. Find in your own experience illustrations of the distinction between fixed and adaptive controls of conduct. What principles of hygiene have you consciously used in meeting new situations and forming new habits? In what way have you applied consciously the facts and principles that you learned in the study of geography? How has the knowledge that you acquired in the study of physics, chemistry, or biology in the high school helped you?

3. Select a specific piece of conduct that you wish to make habitual, — such as going through a series of "setting-up" exercises immediately after arising each morning, or devoting fifteen minutes at a definite time each day to systematic reading that is not a part of the required work of the school, or speaking with clear enunciation if you happen to be a person who mumbles his words and clips his final consonants. Keep a record of the progress in each case, and note how long it takes to establish the habit, what difficulties you have to overcome, and what devices help you most in overcoming the difficulties.

4. Illustrate from your own experience the distinction between ideas and ideals. Try to trace your "terminal" ideals or ambitions to their sources, and determine the part (if any) that your teachers and your school studies have played in the development of these ideals.

5. Study your own "attitudes," your preferences (tastes) for certain types of literature or art, your political prejudices (if you have any), your deeply-seated moral convictions. What influences have been exerted upon you that may account in part for these attitudes? (Consider home training; school instruction; church and

and later with Brown University and Columbia University. The quotation in the text is from a paper that he published just before his death, "The Source of Educational Objectives," *School and Society*, May 12, 1923.

Sunday-school experiences; books that you have read, especially novels, histories, and biographies; and the personal influence of the people whom you have known.)

6. In observing classwork in the elementary or high school try to identify the type of lesson. Note especially what is done to initiate specific habits and skills, to develop meanings, to engender ideals. Note, too, the ways in which the life of the school may influence (whether for good or for evil) the more fundamental attitudes of the pupils.

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Chapter X

EDUCATIONAL SYSTEMS

The aim of the preceding chapters has been to set forth the outstanding facts regarding the purposes, materials, and processes of education. The present chapter turns to another group of facts with which the prospective teacher should have an acquaintance if he is to understand the conditions surrounding the teaching service and if he is to decide intelligently as to the particular branch of the teaching service that he will prepare himself to enter. These are the facts relating to what may be called the "machinery" of education, — the established agencies or institutions through which the purposes of education as a great public enterprise are realized.

The magnitude of the educational enterprise. — Taken as a whole, the work of organized educational agencies constitutes the largest single enterprise in our country with the exception of farming and the all-inclusive business of government itself. In the work of education a larger number of individuals are engaged each year than in any other single kind of work. Pupils, students, teachers, school executives, and other school employes of all kinds constitute as a group more than one fifth of the entire population. To build up an adequate mental picture of an organization so huge as this is not an easy task, but it is well worth the effort.

The Classification of Educational Agencies

The problem. — Perhaps the best way to start the construction of such a picture is to attempt a classification of the institutions and agencies that carry on this vast enterprise. We know that there are schools of various kinds, — elementary schools, high schools, colleges, universities, medical schools, law schools, reform schools, technical schools, trade schools, rural schools, urban schools, schools for the deaf, schools for the blind, public schools, private schools, parochial schools, and a long list of others. It is clear, however, that more than one principle of classification is involved even among the few types of schools that we have named. Elementary schools, for example, may also be public or parochial or private, rural or urban; technical schools may be high schools or they may be colleges; schools for the deaf may be public or private, they may be of elementary-school grade or of high-school grade. It will be well, then, to determine the chief distinctions upon which are based the different types of educational agencies. At least five principles of classification seem to be implied in the grouping of educational agencies that common usage recognizes in referring to different types of schools. Some of these principles will be obvious enough once they are clearly formulated; others will merit more detailed study.

1. **Schools may be classified according to the educational levels represented.** — This principle lies at the basis of the distinctions that are made in American education between elementary schools and high schools,

between high schools and colleges, and (to some extent) between colleges and universities. In general, elementary education has been thought of as including the kindergarten and the first eight grades of the usual public-school program. For the normal child who begins school at six and who completes one grade of school work each year, the elementary-school period ends at the age of fourteen. The standard high school has required four years of work for the average pupil, and the period of high-school or "secondary" education has normally covered the years from fourteen to eighteen. The standard college course is four years in duration, but the more advanced college work, which is sometimes called work of "university" grade, may extend the period of "higher" education two or three years further. Thus there are three large divisions of education that are based upon a combination of the two factors, age and attainment: namely, elementary education, secondary education, and higher education; but just where the lines are to be drawn is not as yet a matter upon which all are agreed. The accompanying diagram indicates both the grouping that prevails the more generally to-day; and the grouping that is strongly advocated by certain authorities. (See diagram p. 265.)

2. Schools may be classified according to the aims and objectives that they seek to attain. — A very important distinction is to be drawn between institutions of *general education*, and institutions of *specific education*. General education involves those materials and processes that will be of probable significant value to every individual whatever his specific occupation or mode of life

PROBABLE CHANGES IN TERMS RELATING TO EDUCATIONAL LEVELS

Normal age of pupil or student	*Grade or year designations*	*Older designations for groups of years*	*Present tendencies in nomenclature*	*Educational levels (older nomenclature)*	*Educational levels (present tendencies)*
Under 6	Kindergarten	Kindergarten	Kindergarten. Primary grades	Elementary	Elementary (Kg. through 6th school year)
6 to 7	1st grade	Primary grades			
7 to 8	2d grade				
8 to 9	3d grade		Intermediate grades		
9 to 10	4th grade	Intermediate grades			
10 to 11	5th grade				
11 to 12	6th grade				
12 to 13	7th grade	Upper grades	Junior high school or Intermediate school	Secondary	Secondary (7th to 14th school years, inclusive)
13 to 14	8th grade				
14 to 15	9th grade or 1st h. s. yr.	High school			
15 to 16	10th grade or 2d h. s. yr.				
16 to 17	11th grade or 3d h. s. yr.		Senior high school		
17 to 18	12th grade or 4th h. s. yr.				
18 to 19	Freshman or 1st college yr.	College or University	Junior college	Higher	Higher (15th to 19th school years, inclusive)
19 to 20	Sophomore or 2d college yr.				
20 to 21	Junior or 3d college yr.				
21 to 22	Senior or 4th college yr.		University		
22 to 23	1st graduate yr.	University			
23 to 24	2d graduate yr.				
24 to 25	3d graduate yr.				

may be. Specific education, on the other hand, deals primarily with specialized materials and processes, and is distinctly pointed toward specific occupations or modes of life.

Types of "general" education.— (1) Fundamental education. — General education may be further subdivided into at least two rather distinct types: *fundamental* education, the most important materials of which were described in Chapter III; and *liberal* education, some of the typical materials of which formed the theme of Chapter IV. Fundamental education may be thought of as comprising the habits, skills, ideas, ideals, and attitudes that are absolutely necessary to individual survival under the conditions of modern civilization. In addition to (*a*) the basic social arts described in Chapter III, there is general agreement that fundamental education should also reflect: (*b*) the specific habits and general ideals that make up the social amenities, — decent behavior, deference to age and to womanhood, and consideration for the rights and feelings of others; (*c*) the habits, knowledge, and ideals that make for personal and social health (Chapter V); and (*d*) the habits, knowledge, and ideals that are indispensable to good citizenship, including the basic facts of geography and national history and a knowledge of the forms and functions of democratic government.

(2) Liberal education. — Fundamental education is pointed toward the clearly predictable situations which all must face in living the social life. It tends, therefore, to emphasize the *fixed* outcomes referred to in Chapter IX. Liberal education deals chiefly with the *adaptive*

outcomes (Chapter IX), and prepares for situations the precise nature of which cannot be predicted. It aims to equip the individual, not so much with specific skills as with broad and comprehensive principles. It aims to make the world just as meaningful to him as possible. It furnishes him with standards of value, through which he can view problems in their proper proportions, — not distorted by local, selfish, or partisan points of view. Through the study of history, it aims to rid his mind of the fallacy of the immediate, — to give him a time perspective upon his own life and the issues of his own generation which he must help to meet. Through science, it tries to free him from the shackles of superstition, fraud, and error which often reduce strong men to the helplessness of infancy. Through literature and art, it tries to reveal the finer and more subtle forces which dominate human motive and often determine human conduct — forces so subtle that only the masters can detect them, but which when once revealed are available to all who can appreciate and understand. It is clear that a liberal education in this sense could be made of large value to an individual irrespective of his particular occupation or mode of life; hence its inclusion under the broader term, "general" education.

Dr. David Snedden[1] has proposed a somewhat different distinction between liberal and vocational education. He divides human activities into two large groups which he calls production and con-

[1] David Snedden (born 1868) has won wide recognition as a student of the problems involved in vocational education and as a pioneer in the study of the sociological phases of education. He has been on the staff of Teachers College, Columbia University since 1905, except for the period between 1909 and 1916 when he served as Commissioner of Education for the State of Massachusetts. The point of view to which reference is made in the text is et forth in his *Vocational Education*, Macmillan, 1920, ch. iii.

sumption. In the economic order, every person who "pulls his own weight" must be a producer (whether directly in farming, fishing, or manufacturing, or indirectly through essential services rendered to actual producers); and every person, too, is necessarily a consumer of his own products and of the products of others. Education, then, must aim to develop both productive capacities and consumptive or utilizing capacities. Education for production is the field of vocational education, education that will make the individual a better consumer is the field of general and especially of liberal or cultural education. This point of view is particularly significant because of the definite value that it recognizes for those types of education that will lead men and women to make a wise use of their leisure time (for civilization greatly extends the leisure time of the average individual), and to use intelligently the products of labor (which constitute social capital).

Types of specific education (1) Vocational education. — Specific education also has its subdivisions. Preparation for particular occupations can be included under the broad term, *vocational* education, of which several sub-types at once suggest themselves: (*a*) "industrial" education is usually thought of as dealing with the training of skilled artisans in the mechanical trades; (*b*) "technical" education prepares those whose work will lie in the broader constructive or planning phases of industry; (*c*) "commercial" education on the lower (secondary) levels trains for the "skill" phases of business life, — accounting, stenography, and the like; on the higher levels, commercial education is analogous to technical education; (*d*) "agricultural" education deals with the specific problems involved in technical training for farming and allied occupations; (*e*) "home-making" education takes as its field the large and important problem of preparing women for the innumerable re-

sponsibilities of the home; (*f*) "professional" education is analogous to technical education in that it deals extensively with principles as well as with skills; its field is that of preparing recruits for the occupations that are called professions, — medicine, law, the ministry, teaching, dentistry, pharmacy, nursing, journalism, social work, and the like.[1]

(2) Auxiliary education. — A second subdivision of specific education is coming to be included under the term, *auxiliary* education. Here the differentiating principle is not preparation for particular occupations but rather for particular modes of life. The term is usually employed in referring to educational institutions that care for those who deviate in a marked degree from the norm. Thus we have schools for "sensory" deviates, — for the blind and the deaf; schools for "mental" deviates, — for morons and the feeble-minded; schools for "moral" deviates or delinquents, — reform schools and parental schools; and a beginning has been made in the establishment of special schools or classes for the exceptionally bright or "gifted" children (see Chapter VIII).

3. Schools may be classified according to their means of support. — The broadest distinction here is between schools that depend for their support chiefly upon the fees that are paid by their pupils, and which may be called *tuitional* schools, and those in which instruction is given either entirely or largely without cost, and which

[1] It is clear that a sharp line cannot be drawn between the technical and professional occupations, but in a general way the technical occupations are seen to deal with *things*, while the so-called professions generally involve *personal* relationships.

are called *free* schools. Of the latter type, there are two important sub-types: "tax-supported" schools, where the cost of operation is met from public funds derived chiefly by taxation; and "endowed" schools, which depend upon private benefactions.

4. Schools may be classified according to the agencies that control them. (1) *Public control.* — Tax-supported schools are almost always controlled by legally constituted boards which represent the people as a whole and are responsible to the people either directly or through an executive or legislative body. Such schools are known in this country as *public* schools when they are of elementary or secondary grade and are under the control of local governmental units such as the city, county, town, or school district; when they are schools of higher education, they are usually called *government* institutions, *state* institutions (usually colleges or universities), or *municipal* institutions, accordingly as the control is vested in one or another of these three governmental units.

(2) *Corporate control.* — Many schools supported in whole or in large part by public benefactions are controlled by boards of trustees that are self-perpetuating (that is, new members are chosen by those who themselves constitute the board). Such boards are usually incorporated under the state laws, and this type of control may therefore be termed *corporate.*

(3) *Church control.* — There is, however, an important group of institutions that are supported chiefly by religious bodies; when these are controlled by such bodies (sometimes they are controlled by independent

boards of trustees) they may well be called *church* schools. Here the largest group is that represented by the "parochial" elementary schools of the Roman Catholic and Lutheran churches, but these and other denominations also support and control a number of secondary and higher institutions.

(4) *Private control.* — Finally there are the institutions that are controlled by individuals or by joint-stock companies. These are usually of the tuitional type, and not only depend upon student-fees for support but also look to these fees as a source of profit. It is well to reserve the designation, *private* schools, for this group.[1]

5. Schools may be classified according to the type of community that they serve. — This basis of classification is particularly important in the discussion of public-school problems. The outstanding distinction is that which is recognized between *rural* and *urban* schools. The United States Bureau of Education draws a line between these two groups very definitely, including as rural schools those that serve communities of fewer than 2500 inhabitants. There are consequently two important subdivisions of this group, "open-country" schools and "village" schools, — two terms which are self-explanatory. Another helpful classification of rural schools is based upon the number of

[1] The restriction of the terms "public school" and "public institution" to tax-supported and publicly controlled schools and colleges has been deplored by those interested in corporate and church institutions on the ground that the latter institutions are "public" in several important ways. In the first place they are open to the public; in the second place, while they do not draw their support from public taxation, they often appeal to the public for support; and in the third place, they are not infrequently subject to a certain measure of state control.

teachers employed; thus the terms "one-teacher," "two-teacher," and "three-teacher" schools will recur frequently in the discussion of rural-school problems, while for open-country schools of more than two or three teachers the term "consolidated" school is often employed because such schools have usually been formed through the consolidation of two or more smaller units.

Summary. — It may be helpful to summarize the preceding paragraphs in the following scheme:

A Suggested Classification of Educational Agencies and Institutions

a. As to *educational levels*

1. Elementary schools (including kindergartens)
2. Secondary schools (high schools, academies, and other institutions of secondary grade)
3. Higher institutions (colleges and universities and professional and technical schools of collegiate or university grade)

b. As to principal *aims and objectives*

1. Institutions of *general* education (these include practically all elementary schools ["fundamental education"], many secondary schools, and "liberal-arts" colleges and universities ["liberal education"])
2. Institutions of *specific* education
   - (*a'*) Institutions of "vocational" education
     - (1') On the elementary level: a few trade and industrial schools
     - (2') On the secondary level: technical and commercial high schools; separate trade and industrial schools, and trade and industrial courses and curricula in high schools; commercial schools ("business colleges") and commercial courses and curricula in

high schools; agricultural high schools and agricultural courses and curricula in other high schools; some normal schools; some schools of nursing

(3′) On the higher level: teachers' colleges and collegiate normal schools; most schools of medicine, law, theology, dentistry, pharmacy, veterinary science, journalism and social work; agricultural colleges; technical (engineering) colleges; some schools of nursing

(*b*′) Institutions of "auxiliary" education

(1′) Schools and classes on the elementary and secondary level for the deaf and blind

(2′) Schools and classes chiefly on the elementary level for backward children, morons, and the feeble-minded

(3′) Reform schools and parental schools for moral delinquents; chiefly elementary

(4′) Schools for exceptionally bright ("gifted") children on the elementary and sceondary levels

c. As to *support*

1. "Tuitional" schools: chiefly private elementary and secondary schools; some colleges and professional schools; many technical and trade schools
2. "Free" schools

(*a*′) Tax-supported: all public elementary and high schools; most state and municipal colleges and universities, including normal schools and teachers' colleges, agricultural colleges, and professional and technical schools that form parts of state universities

(*b*′) Endowed: a few high schools ("academies"); many colleges and universities; some professional schools especially of theology and teaching

d. As to *control*

1. Schools controlled by the *people as a whole* through some government unit (school district, town, township, county, state, nation): all public elementary and secondary schools; most institutions of auxiliary education; most normal schools and teachers' colleges, agricultural colleges, and state and municipal universities
2. Schools controlled by *churches:* parochial schools of elementary and secondary grade; many secondary schools (academies); some colleges and universities
3. Schools controlled by *incorporated boards:* secondary schools ("academies"); many colleges, universities, technical schools, and professional schools
4. *Private* schools controlled by individuals and joint-stock companies, usually for profit: some elementary schools; many secondary schools (academies); trade and industrial schools; a few normal schools; many commercial schools ("business colleges"); few if any institutions of higher education

e. As to *type of community served:*

1. Rural schools (communities of fewer than 2500 inhabitants)
   - (*a'*) Open-country schools
     - (1') One-teacher schools
     - (2') Two-teacher schools
     - (3') Consolidated schools
   - (*b'*) Village schools
2. Urban schools

The Pupil and Student Population

Upon the basis of some such analysis and classification as the preceding section sets forth, one may well proceed to the next step in the construction of a mental picture which will embody the outstanding features of American educational systems. The magnitude of the educational enterprise has already been referred to.

To know how the pupils and students are distributed among the various agencies of education will aid one in appreciating what this magnitude actually means.

How pupils and students are distributed among the various types of schools. — An overwhelming proportion of the pupil and student population is represented, of course, by the enrollment of the public elementary and high schools. In 1920, this enrollment reached the impressive total of a little over 21,000,000.

There are many devices which one may use in attempting to get a fairly clear idea of such very large numbers. If we imagine this vast army of public-school children assembled for a "grand review," and marching four abreast, it is easy to compute that it would take a month for the army to pass a given point, — assuming that two ranks passed each second and that the procession continued twenty-four hours each day. Again, if this army were assembled in a single group, allowing standing-room two feet square for each, it would spread out over an area of 2000 acres or more than three square miles. If each were to be allotted "camping ground," — say a space two by six feet on which to lie down, every inch of space on nearly 6000 acres or nine square miles would be occupied, — one fourth of a "congressional township."

While some persons find such devices for conceiving huge magnitudes helpful, others are probably distracted by irrelevant factors. Having gathered the 21,000,000 school-children on a 2000-acre or a 1000-acre space, a conscientious imagination is likely to be puzzled as to how to feed them and how to get them back![1] Even this curiosity might lead to a further clarification of the conception, however, if the student cared to make some further computations relative to the amount of food required for a single breakfast, or the number of passenger coaches that it would take to transport the multitude.

[1] This difficulty has been very interestingly discussed by John Adams in his *Exposition and Illustration in Teaching*, Macmillan, 1910, ch. xii.

Another kind of picture which does less violence to the actualities may be built up by imagining the various divisions of this great army on their march to school. Anyone who looks out upon a city street, a country highway, or a village lane between half past eight and nine o'clock in the morning of any school day will see the "local contingents" take up the march. Let the imagination be extended to cover all of the neighborhoods of the community; then all the communities of the state; then all the states in the time-belt. When it is half past eight in Boston, the first division begins its march, — a great movement that extends all the way from easternmost Maine to the tip of Florida and west to the further slope of the Alleghenies. Half past nine in Boston, — half past eight in Chicago: another division dotting every street and highway from the Great Lakes to the Gulf of Mexico falls into line. Half past ten in Boston, — half past eight in Denver: the third division stretches out over the plains and mountain valleys from Montana to the Mexican border. Half past eleven in Boston, — half past eight in San Francisco: from Puget Sound to San Diego, the fourth division takes up the march.

The enrollment of 21,000,000 for the public elementary and high schools must be increased by approximately 2,000,000 which represents the enrollment in parochial and private schools of elementary and secondary grade, thus making a total of 23,000,000 on these two educational levels. On the level of higher education, the enrollment is relatively much smaller, and yet even here the number is now more than half a million.

The distribution of elementary and secondary pupils as to age and grade. — In so far as numbers enrolled in the schools are concerned, the most significant period of life from the educational point of view lies between the ages of six and fourteen. Of the total number of persons between the ages of five and twenty who were attending school in 1920, nearly two thirds (62.8%)

were in this age-group, while slightly more than one fourth (26.3%) represented the age-group, 14–18. This is only a partial indication of where the "peak-load" of the public school lies. Although one fourth of all pupils in attendance represent the age-groups, 14 to 18, by no means one fourth of the public-school enrollment is in the corresponding grades. In fact, if we take the public-school enrollment for 1919–20 (leaving out the kindergarten) we find the following distribution[1] of the pupils among the various grades:

Grade	Per cent of Total	
1	19.8	Primary grades: 32.3%
2	12.5	
3	11.8	Intermediate grades: 43.0%
4	11.5	
5	10.4	
6	9.3	Junior-high-school grades: 19.2%
7	7.9	
8	7.4	
9	3.9	
10	2.4	Senior-high-school grades: 5.5%
11	1.7	
12	1.4	

Practically three fourths of the school burden falls, then, in the primary and intermediate grades, and if the kindergarten enrollment were added, the burden of the kindergarten-primary and intermediate divisions would be found to be even greater. The table shows clearly, too, where the largest demand for teachers is likely to be found under present conditions.

[1] These per cents have been computed from the careful estimates of grade-distribution published by the U. S. Bureau of Education, *Annual Report*, 1920, p. 7.

Retardation and elimination. — These comparisons of grade enrollment are indicative of a condition that has constituted a very serious problem in American education. Not all pupils progress regularly from grade to grade in harmony with their chronological ages. In place of this regular and uniform progression, we find in almost every classroom (in addition to a group that are of normal age for the grade) both underage and overage pupils, the latter usually greatly outnumbering the former. This means either that many pupils do not enter school at the normal age of six, or that many are held back and required to repeat the work of one or more grades. Both of these factors, and especially the latter, give rise to what is technically known as *retardation* (see ch. viii). Retarded pupils not only tend to accumulate on the lower educational levels, but they also tend to drop out of school at the earliest date that the compulsory-schooling laws will permit; hence arises the problem of *elimination,* — another technical term which means dropping out of school before one has completed the work of the eighth grade.[1]

The wide discrepancy between the enrollment of the first grade and the enrollment of the eighth grade is not of course entirely due to retardation and elimination. It must be borne in mind that first grade enrollment will always be relatively larger than eighth-grade enrollment as long as the population is increasing. It is also true that death claims a small proportion of children of school age, and that this factor will account for a certain part of the discrepancy. Even when these

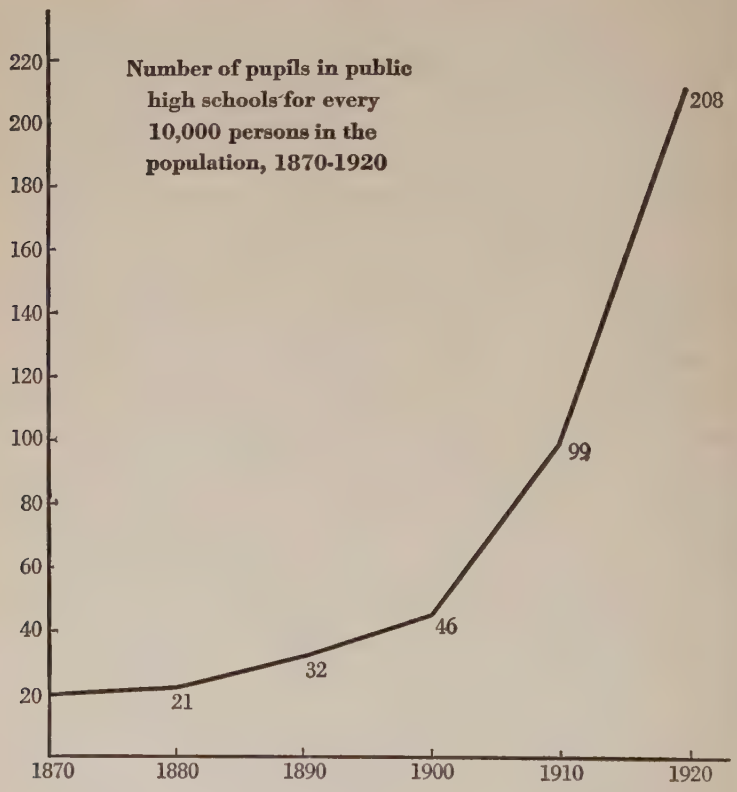
[1] The seventh grade in many of the Southern states.

and other factors are duly considered, however, the elimination that is unquestionably due to "repeating" grades remains by far the most significant factor in producing these differences.[1]

The growth of the high-school enrollment. — It will be noted that the enrollment in the four years which constituted the high-school period under the older terminology is only about ten per cent of the total enrollment. It would be quite erroneous, however, to conclude from these figures that only ten per cent of American children attend high school. The four high-school years constitute only one third of the twelve-year total; hence if the population were stationary, and if everyone who entered the first grade progressed regularly through to the twelfth grade, the enrollment in the last four grades would be only one third of the total. It will probably never even approximate so high a proportion, (1) because the population, at least for decades to come, will continue to increase, thus giving a relatively larger number of children to the lower educational levels; and (2) because elimination in the elementary school, while possible of great reduction, will probably never be reduced to zero. As a matter of fact, however, the number of pupils that are kept into and through the high school has increased remarkably within the past ten years, and it is still increasing literally by "leaps and

[1] The first extensive investigation of retardation and elimination was made for the Russell Sage Foundation and published under the title, *Laggards in Our Schools*, in 1909. The author, Leonard P. Ayres, is one of the most prominent American statisticians. He was born in 1879, and served as a teacher and a school administrator in Porto Rico soon after it became an American possession. During the World War, he was Chief Statistician of the American Expeditionary Forces. Since 1920 he has been vice-president of the Cleveland Trust Company.

bounds." The enrollment in the four high-school years has more than doubled within the past decade. This growth has been stimulated very largely by the greatly



increased provision of high-school facilities. During the past thirty years, the high-school enrollment has grown ten times as fast as the general population. Out of every 100 pupils who entered the first grade in 1912,

slightly more than 23 enrolled in the first high-school year in 1920. In many city school systems where high schools are well supported, the proportion of first-grade pupils who eight years later are enrolled in the first high-school year has been as high as forty per cent.

The growth of enrollment in higher institutions. — The rapid increase in the number of high schools during the past thirty years, and the consequent heavy increase in high-school enrollment, has had the effect of stimulating larger and larger enrollments in colleges and other institutions of higher education. The enrollment in such institutions was more than doubled during the decade 1910–1920, and is still increasing at a very rapid rate. In 1920, the aggregate in all higher institutions was approximately 625,000.

Characteristics of the pupil and student population on different educational levels: *Differences due to elimination and selection.* As has been pointed out (ch. viii), a most important problem of teaching is to adapt the materials of education to different learning-capacities. While this problem is difficult enough when the pupil-group or class is fairly homogeneous, — that is, made up of pupils who are closely similar in their abilities, — it becomes much more complicated when the groups represent wide variations in capacity. This variation is greatest on the lower age-levels where a typical classroom is likely to reflect all grades of ability except as the extreme dullards or the very superior pupils or both are segregated in special classes. Throughout the first six grades, this heterogeneous character of the pupil groups persists. The seventh and eighth grades or the

first two years of the junior high school usually represent some measure of "selection." The slower learners, having been retarded in the earlier years, are likely to reach the end of the compulsory-schooling period before they have attained a seventh-grade status. In the senior high-school years, the homogeneity is further increased through the dropping out of more of the slow learners; and those who pass from the high school to college constitute a still more highly selected group.

Factors other than native ability affect this selective process. — It should not be inferred, however, that persistence in school is determined entirely or even predominantly by inborn capacities. Many very capable pupils are prevented from continuing in school beyond the compulsory-schooling period because their parents are financially unable to keep them there. Others, who could afford to remain, are tempted by the prospect of earning without further education what seems to them a good wage. Still others are restive and restless under the constraint of the school, and take the first opportunity to leave. Among those who remain in school, too, there are many slow learners who, through personal ambition or parental pressure or both, do not give up. Thus, while the upper grades and the high school are in a sense "selective" of the better grades of ability, they are by no means rigidly selective. The clear tendency of the past two decades has been to keep pupils in school just as long as possible, and to provide types of work that even the slow learners will be able to do with profit. To-day it may be safely said that the chief factors determining persistence in school are, for

the vast majority of boys and girls, economic and social rather than strictly mental.

A number of careful studies have centered upon this problem. One of the earliest of these, made by J. K. Van Denburg,[1] found only slight evidence that the economic status of parents influenced the persistence of pupils in the New York high schools. The factors that seemed to be most significant were: (1) the presence or absence of younger children in the family; (2) the nationality of the parents; (3) the choice or lack of choice of an occupation; and (4) the intention of the pupil with regard to graduation. C. E. Holley,[2] however, in studying the problem in the high schools of two Illinois cities, concluded: (1) that there is a high correlation between the economic, educational, and social advantages of a home and the number of years' schooling which its children receive; (2) that economic and social influences more often cause a child to stop attending school than does lack of ability to do the work; (3) that truancy is most frequent among children of poor and uneducated parents; and (4) that a "family tradition of schooling" is probably very effective in inducing unusual persistence in school in some cases. F. P. O'Brien[3] has furnished evidence which shows that poor mental ability may not be a pronounced cause of elimination from high school. H. G. Burdge,[4] in a monumental study of some 200,000 boys between the ages of 14 and 16 who had dropped out of school in New York State, found very clear evidence that these years constitute a "restless" age, and that boys at this time are likely not only to leave school, but to quit any work that they undertake after a few months' experience with it; leaving school or leaving any other type of work may not be due to inability, but rather to this spirit of restlessness which makes persistence in any single activity distasteful.

[1] J. K. Van Denburg: *Causes of Elimination of Pupils in Secondary Schools.* Teachers College Bureau of Publications, New York City, 1912.

[2] C. E. Holley: "The Relationship between Persistence in School and Home Conditions." *Fifteenth Yearbook,* National Society for the Study of Education. Public School Publishing Co., 1916. Part II.

[3] F. P. O'Brien: *The High School Failures.* Bureau of Publications, Teachers College, New York City, 1919.

[4] H. G. Burdge: *Our Boys.* New York State Military Service Commission, Albany, 1921.

Differences due to stages of mental and physical development. — There are, of course, marked differences among pupils of different age-groups, and these are probably more important to the teacher than are the differences that result from the sifting process of elimination and selection in so far at least as the latter operates in the elementary school and in the earlier high-school years. With regard to physical development, certain stages or nodes are clearly marked, and while there is much uncertainty as to whether these physical differences are correlated with equally distinct mental differences, the evidence is sufficiently convincing to warrant a provisional recognition of four stages of mental development corresponding roughly to four important stages of physical growth. These may be conveniently referred to as: (1) the *childhood years*, covering normally the period of kindergarten-primary education or the chronological ages five to seven inclusive; (2) the *juvenile years*, covering normally the period of the intermediate grades (III, IV, V, and VI), or the chronological ages eight to eleven inclusive;[1] (3) the *early adolescent years*, covering normally the period of the junior-high school (grades VII, VIII, and IX), or the chronological ages, twelve to fourteen inclusive; and (4) the *later adolescent years*, covering normally the period of the senior high school (grades X, XI, and XII), or the chronological ages fifteen to seventeen inclusive.

The more important characteristics of these periods will be discussed in Chapter XII.

[1] Some students of the problem, including one of the authors of this book, regard the third grade as properly a part of the "primary" division, and would have the "intermediate" division begin with the fourth grade.

Variations in the pupil and student population due to type of community. — (1) Urban and rural communities. — The most significant distinctions in American communities are those that set off the city-dwellers from those who live in the open country. These differences are reflected in some measure in the pupils of urban schools as compared with those of the rural schools. The child who lives on a farm has many educational advantages in the way of contacts with nature, and usually in the way of home-responsibilities, that the town and city children lack. On the other hand, the city child has more numerous human contacts, and probably an environment that is more continuously (although perhaps less wholesomely) stimulating to mental growth. Some students of the problem believe that the development of the cities has tended to drain the rural districts of the more intelligent stock, and that the level of native mental ability is therefore likely to be lower among country children than among city children. Others believe that the inadequacy of the rural school, — the short terms, inadequate supervision, and undertrained teachers, — will explain the differences that are found. There can be no question with regard to the differences. The studies[1] that have been made show very clearly that rural school children at the close of the elementary-school period, are likely to be at least one year behind comparable city children in school attainments; and the results of the Army intelligence tests which were given to the drafted soldiers in 1918

[1] The "school surveys" of New York, Kentucky, and Virginia have all shown this very clearly.

showed consistently lower scores for white soldiers from the rural states than for white soldiers from comparable urban states.

(2) Native and foreign-born communities. — Difficulties of teaching, especially in the elementary schools, are intensified in many American communities by the large enrollment of children from immigrant homes. In such communities, the schools have frequently to teach the pupils to speak English before they can proceed with the work that the school attempts from the outset with the children of the native-born. Again it is maintained by some students of the problem that certain elements of the foreign-born population represent a relatively low level of mental ability which is reflected in larger proportions of slow learners than one finds among the children of the native-born, while others contend that most of the differences found may be satisfactorily explained in other ways. In any event, it is clear that the foreign-born community constitutes a real problem in American education.

The Teaching Population

Teaching numerically the largest professional occupation. — The total number of teachers in the United States was reported by the Census for the year 1920 as 761,766. This number may be compared with corresponding numbers for other professional groups [1] as follows:

For every 139 people in the country there is one teacher
" " 481 " " " " " " " physician [2]

[1] In the aggregate the teaching profession outnumbers the *combined* personnel of the other five groups by 25,000.

[2] Including dentists, veterinarians, and osteopaths, as well as doctors of medicine.

For every 709 people in the country there is one trained nurse
" " 777 " " " " " " " engineer
" " 831 " " " " " " " clergyman
" " 855 " " " " " " " lawyer

Distribution of teachers as to different types of schools. — The great majority of teachers (680,000 in 1920) serve in the public elementary and high schools. It should be of interest to the prospective worker in this field to know in what proportions these teachers are distributed among the various divisions of the public-school service. The following tabulation gives this information in an approximate fashion:

Classroom teachers—
In elementary schools of cities . . . . . 272,000 or 40.0%
In elementary schools of villages and open country . . . . . 280,000 or 41.2%
In all elementary schools (kindergarten to eighth grade inclusive) [1] . . . . . 552,000 or 81.2%
In high schools (eighth to twelfth grade inclusive) [1] . . . . . 97,000 or 14.3%
Superintendents, principals, supervisors . . . . . 31,000 or 4.5%

Outstanding characteristics of the different groups. — Among the several groups listed in the above tabulation there are differences so wide and so significant that one cannot gain a clear picture of the teaching population as a whole without first studying the important characteristics of each group.

Urban and rural elementary teachers. — The elementary-school teachers of the United States are almost equally divided between the city schools and the rural

[1] Except for certain of the Southern states in which the usual division recognizes seven elementary and four high-school grades.

schools of the small villages and the open country. These two groups, as was pointed out in Chapter I, contrast sharply with one another. The elementary-school teachers of the cities constitute on the whole a mature and relatively permanent group, most of whom have been professionally trained for their work. The teachers in the village and open-country schools (and especially in the latter) are as a group much younger than the city teachers, the great majority of them remain but a very brief period in the service, and as a group they represent a deplorably low level of general and professional education.

There are wide variations among the different states in the age, experience, and training of rural and urban teachers, but in every state the differences between the two groups are clearly marked. In New York State, for example, the differences among teachers in different types of elementary schools were reported for 1921 as follows:[1]

MEDIAN AGE, EXPERIENCE, AND TRAINING OF ELEMENTARY-SCHOOL TEACHERS IN NEW YORK

	MEDIAN AGE	MEDIAN YEARS EXPERIENCE	PER CENT WITH 2 YEARS OR MORE NORMAL-SCHOOL TRAINING
Teachers in one-teacher schools. .	23.7	3.16	5.61%
Teachers in two-teacher schools.	27.6	6.36	10.12%
Teachers in village elementary schools.	28.5	6.51	38.51%
Elementary teachers in cities of the third class.	29.0	11.00	80.0%
Elementary teachers in cities of the second class.	34.0	13.00	62.0%

[1] *Rural School Survey of New York State*, vol. i, pp. 42ff.

The report of the New York Rural School Survey also summarizes these differences in terms of what they mean to the rural child as contrasted with the city child:

"The child attending a one-teacher school has one chance in two of having a teacher who is less than 24 years old; he has one chance in four of having a teacher who is not yet old enough to vote. . . . A child in a typical second-class city of New York State has one chance in two of *not* having a teacher who is under 34 years of age; in a third-class city, a child has one chance in two of *not* having a teacher who has not passed the age of 29. . . .

"As to the teacher's experience, the child attending a one-teacher school has one chance in five of coming under the instruction of a teacher who is just beginning his or her work; in the typical city school system the chances are in the ratio of one to ten — just half the risk. The rural child in the one-teacher school has between one chance in five and one chance in six of having a teacher who has taught at least ten years; the chances that the teacher will have had more than ten years of experience are more than doubled in the . . . cities.

"As to education, the New York rural child attending a one-teacher school has one chance in twenty of having a teacher with 'standard training,' — two years' attendance at a normal school or college following graduation from a four-year high school; if he attends a two-teacher school, his chances are about doubled (2 in 20); in a village school his chances would be increased seven-fold (7 in 20); in a second-class city, the chances would be multiplied by twelve (12 in 20); and in a third-class city they would be multiplied by sixteen (16 in 20)." [1]

The elementary-school teachers, whether in urban or rural schools, are alike in two important particulars: they come chiefly from large families and from families that live in moderate circumstances. This holds true for every state in which studies of the teaching population

[1] *Rural School Survey of New York State*, vol. iv, pp. 95 f. Ithaca, 1923

have been made, and it is a fact that must be reckoned with whenever an effort is made to raise the standards of professional education for teachers in the elementary-school service. Dr. Coffman [1] found in 1911 that the family supplying the typical ("median") woman teacher in the elementary schools had an annual income of $862 and that this typical teacher's family numbered six persons — four children and the parents. Studies made since that time fully corroborate Coffman's findings. The family income reported in the more recent studies is, of course, larger than that found by Coffman, but when a correction is made for the decreased purchasing power of the dollar, the economic situation of the families supplying recruits to the elementary-school service is seen not to have been appreciably changed. It would, of course, be very difficult for such families to provide an extensive training for any of their children in preparation for a profession. This is one of the reasons for the low standards of teacher-preparation that prevail in elementary-school service outside of the larger cities.[2]

[1] Lotus D. Coffman was the pioneer student in this field of educational research. His monograph, *The Social Composition of the Teaching Population*, was published in 1911. He was born in 1875, and after a wide experience as a teacher and superintendent, became director of the training school in the Eastern Illinois State Teachers College, and in 1912 a professor in the University of Illinois. Since 1920 he has been President of the University of Minnesota.

[2] In view of this condition, the proposal has been made to provide state subsidies for students who are preparing to enter the public-school service. A discussion of this problem will be found in W. S. Hertzog's *State Maintenance of Teachers in Training*, Warwick and York, 1921. Maryland now bears all of the expenses of students in its State normal schools in excess of $100 annually. Connecticut provides a scholarship of $300 annually for one student from each town in the state. Delaware offers fifty free scholarships covering tuition, board, and lodging for a period of two years. The Education Bill which has been before Congress for the past five years, and which proposes among other things Federal aid to the states for the training of teachers, stipulates that a state may use part of its allotment of the Federal funds to provide scholarships for prospective teachers.

High-school teachers. — The chief differences between elementary-school and high-school teachers are in standards of educational attainment and the economic status of parents. The typical high-school teacher is a college graduate — that is, he or she has had four years of education beyond graduation from high school; except in one or two of the largest cities, the standard of preparation for the elementary-school teacher is but two years of education beyond high-school graduation, while a large majority of the elementary teachers of the country have not as yet reached this minimum. The high-school service as a rule, then, is open only to those who are sufficiently well circumstanced to undertake the longer and more expensive training. The families supplying high-school teachers, as reported in the few studies that have been made, have in the average of cases fewer children and larger incomes than the families supplying elementary-school teachers.

Certain other facts regarding the high-school teachers are important: (1) The proportion of men in this branch of the service is much higher than in the elementary schools. In 1900, the number of men was about 33,000 or one third of the total number of high-school teachers. (2) While the pre-service education of high-school teachers is longer than that of elementary teachers, the professional emphasis in the preliminary education is much less in evidence. (3) This lack of a professional atmosphere in the training institutions may account for the fact that the average length of service for high-school teachers is less than that of elementary teachers who have had the standard normal-school or teachers-college preparation.

Administrators and supervisors. — This group includes school superintendents and their assistant superintendents; elementary-school and high-school principals; subject-matter supervisors, grade supervisors, and rural supervisors; together with (as yet) a small number of school psychologists, statisticians, physicians, and nurses.

Unfortunately we have no studies which enable us to say more of this group than that they constitute a far more mature and stable group than do the classroom teachers, whether elementary or high-school. Recently, too, the standards of education within the administrative and supervisory service have been substantially raised, but it is true that there are still large numbers of superintendents, principals, and supervisors who have not reached the status represented by college graduation. On the other hand, school psychologists, statisticians, and physicians usually represent very high standards of general and professional education.

Summary. — In the light of the facts regarding the various groups that comprise the personnel of the public-school service, we may now proceed to a picture of this personnel as a whole. We shall unite the various groups and assume that each person among these 680,000 teachers is just as important as any other person. This is not, after all, an absurd assumption, for we cannot discriminate among teachers as to their importance without at the same time discriminating among the pupils for whose training these teachers are responsible. Is there anyone who would maintain that a country boy in Oklahoma is either more or less important than a city boy in Buffalo or Seattle? Is there anyone who would maintain that a

seven-year-old girl in the second grade is either more or less important than a seventeen-year-old girl in the eleventh grade? Is it not just, then, in attempting an evaluation of the teachers of American public schools to consider them all of equal importance and of equal potentiality for good or evil? It is true, of course, that we are also including the 31,000 administrative and supervisory officers whose dealings are with teachers rather than directly and intimately with children; but it is also true that they constitute a very small proportion of the total number. For all practical purposes, the American public school can be best evaluated in terms of its teachers.

In constructing the picture of the teaching personnel, it is well to imagine these 680,000 teachers forming a long, single-rank line.

First, let the line form on the basis of *age*. The youngest teacher is at the right of the line; the oldest teacher at the extreme left; the others are arranged in the order of their age. We shall "inspect" this line as in a military review by passing along the front from the right flank to the left flank. The very youngest need not concern us, but we shall probably pass nearly a thousand before we come to the seventeen-year-old group. Two or three thousand of these must be passed before we come to the first teacher who has attained to the age of eighteen; and five or six thousand of these before the nineteen-year-old group is reached. Then the numbers in the age-groups begin to stretch out almost interminably. Forty thousand of the nineteen-year olds we must pass, and then fifty thousand of the twenty-year olds, — one hundred thousand in all before we reach the first teacher who is old enough to vote. Fifty thousand twenty-one years old, and about the same number twenty-two years old; and then the age-groups for each year gradually grow smaller. Somewhere toward the end of the twenty-five year or the beginning of the twenty-six year group we strike the middle of the long line, we reach the "median" teacher as to age; half of the entire number

are behind us, half are still ahead. But now the age-groups become substantially smaller. At about the thirty-seven-year-old group we have passed three fourths of all the teachers; we have only the fourth "quartile" left, and these distribute themselves in ever smaller and smaller age-groups. At the fifty-year-old group we have passed nine tenths of all the teachers. There are only two or three thousand now in each age-group; a little later the numbers dwindle to the hundreds; then to the tens, — and we are at the end of the line.

We redistribute the 680,000 teachers, — this time on the basis of *experience*. Those just beginning their work are on the right; those who have served the longest are on the left. Again we pass the line in review. It is a veritable host of beginners that constitute the first segment of the line. As a matter of fact, no one has yet been able to say with any reasonable degree of certainty just how many teachers begin their work of teaching in American schools each year. Some students of the problem assert that one fifth of the entire teaching population must be recruited anew each year; others place the proportion at one sixth. We shall be within a conservative estimate if we assume one eighth. This means that we should pass by about eighty-five thousand teachers before we came to the first teacher who had taught for a period longer than one year. The group with two years of experience is about the same in size, but the three-year and four-year groups drop off sharply. We pass by the fifth-year group and are well into the sixth-year group before we have reached the "median" teacher with respect to experience, — in other words, before we have reached the middle of the long line of 680,000 teachers. And now, as in the age-distributions, the groups diminish in size. Half of all of these teachers have taught during a period covering six years or less; but the half that have taught for the longer period (more than six years) are distributed over periods of service ranging from seven to sixty years. At least two hundred thousand teachers now serving in our elementary and high schools have taught for ten years or more. More than one hundred thousand have taught for twenty years or more. The thirty-year-service group, however, falls to about 30,000; the forty-year-service group to fewer than 4000; and the fifty-year group to eight or nine hundred at the most.

The alignment is next made on the basis of *training*. Passing from the teacher who has had the briefest education to the teacher whose education has been the most extensive, we first pass by some twenty thousand teachers whose educational equipment for their important work has been limited to what the elementary school provides. A few, indeed, have not progressed beyond the sixth grade; a much larger group have been limited to seventh-grade attainments; while nearly thirty thousand are left behind before the first of the ninth-grade contingent is reached.

The segments representing those whose schooling stopped with the ninth, tenth, or eleventh grades take us well beyond the first sixth of the line; we have passed in all about 120,000 before we come to the first high-school graduate. The next segment, consisting of those who have had high-school education but no more (except, in some cases, a summer term in a normal school) is the largest of all. It stretches out until, in passing it, we have also passed the middle of the line. Then comes the group with one year of training beyond high school, which brings us nearly to the last third of the line. Of the 680,000 teachers, not more than 250,000 are in the group that have had for their work "standard" training or better.[1]

It is instructive to reinterpret these facts regarding the teaching population in terms of the number of pupils that these various groups of teachers have under their charge. Upward of a half million boys and girls are taught by teachers who themselves have no more than an elementary education and many of these boys and girls receive all of their schooling at the hands of such teachers. At least three million children have teachers that have not attained to the level represented by high-school graduation. Between two and three million are

[1] The figures are approximations only. It is very difficult to assemble accurate data regarding the education of teachers in terms of the amount of schooling that they have had beyond the eighth grade. It is only recently that "standard" normal-school training has demanded two full years beyond the high school. Hence a teacher who reports that he or she is a normal-school graduate may have had anywhere from three to seven years of education beyond the eighth grade.

in charge of teachers who are just beginning their work, and the majority of whom have no adequate supervision to direct them. Between two and three million are taught by teachers who are too young to be intrusted with the ballot. No fewer than twelve million have teachers who are below the standard of training recognized as the minimum in most civilized countries.

Measures and policies looking toward the improvement of the teaching population. — It is not to be inferred from the preceding discussion that efforts have not been made to raise the standards of the teaching profession. As a matter of fact, conditions have improved markedly within the past fifty years. The problem is so huge, however, that the rate of improvement is necessarily slow. It is subject, also, to temporary setbacks, — as at the time of the World War, when teachers left the service in large numbers because of the keen demand for intelligent workers in other occupations, and when in consequence untrained teachers were necessarily employed in large numbers. The War, too, has been followed by a period of high prices and a reduced purchasing power for the dollar. As a result, taxes of all sorts have had to be increased in order to support the various activities of the local, state, and national governments, and there has been a growing complaint because of the "rising costs" of public enterprises, especially education, although relatively speaking (that is, taking into account the diminished value of the dollar) the public schools are costing little more in proportion to the number of pupils enrolled than they did before the War and we are spending now no larger

proportion of the aggregate income of the nation on the public schools than we spent a decade ago.[1] It is, then, greatly to the credit of those in charge of the public schools that the standards of training for public-school teachers have been substantially advanced during this period. Many of the states have made rapid strides toward bringing all of their teachers up to "standard training," although no single state has yet achieved this distinction. The principal agencies that have been employed to this end are the summer sessions and the extension courses of normal schools and teachers colleges. (See Chapter I.)

The student who is to-day making an extended and serious preparation for the public-school service should recognize that, other things equal, he or she will be in a fortunate position both for securing a good appointment and for rendering good service. With the steady advance in standards, the demand for the well-trained teacher increases apace. And with the increased demand come larger rewards, both in the way of better salaries and in the way of increased recognition. Many forces are now operating to lift the work of teaching to the plane of a true profession. These forces had their origin and to-day have their center within the profession itself. As better trained recruits enter the work of teaching, the strength of these forces is steadily augmented. This is one of the reasons why, even in an introductory book like this, so much space is given to the problem of im-

[1] Mabel Newcomer: *Financial Statistics of Public Education in the United States, 1910–1920*, p. 4. Macmillan, 1920. This volume is one of the reports compiled by the Educational Finance Inquiry Commission, appointed in 1921 by the American Council on Education.

proving the teaching personnel. It is the teachers themselves who have taken the initiative in this movement; it is the teachers who must carry it through. The professional spirit, — the sense of pride in and responsibility for a great collective enterprise, — must be a growth from within; it cannot come from without.

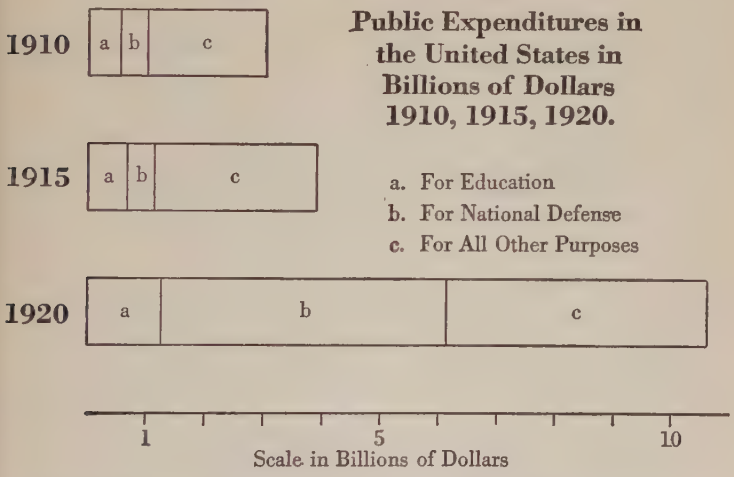
The Money Cost of Education and the Sources of School Funds

The total annual investment in education. — Intimately related to the problem of raising the standards of the teaching personnel is the question of financing education. Taken in the aggregate, the money cost of supporting public schools in our country reaches a huge sum each year, — in 1920 almost a billion and a quarter dollars.[1] This includes only the actual money expended from public funds for the support of public education, for payments made during the year on new buildings and equipment, and for interest on borrowed money. It does not include the interest on the total investment in public-school buildings and equipment. While it includes the cost of higher education in tax-supported institutions, it takes no account of the expenditures of church, endowed, and private schools; nor does it, of course, include the expenditures made by parents for the books, supplies, and other equipment which pupils must have, or for their expenses for board, lodging, and transportation when they do not live at home. If we were to make a rough approximation to

[1] Mabel Newcomer: *op. cit.*, p. 37. The accompanying graph reflects data found on p. 13 of this report.

all of these unrecorded costs, we should find that the total investment of the American people in education each year can be scarcely less than two billion dollars.[1]

On the other hand, it should be remembered that our population is a huge population, and that the sum-total of the nation's wealth has a corresponding magnitude. Even though we are investing some two billion



Proportion of Public Expenditures in the United States in Billions of Dollars.

dollars in education every year, this means an investment of less than twenty dollars *per capita* of the population; it means less than one per cent of our total

[1] Even this would not tell the whole story. In order to compute the total investment in education one would have to add to the items mentioned above certain amounts which would represent what the older pupils and students would earn if they were employed in immediately productive occupations, and what the teachers would likewise earn elsewhere.

wealth;[1] and it means only about three per cent of our total yearly income.[2]

Education essentially an investment. — It should be remembered, too, that the money expended for education is essentially an investment. The outlay is returned to society with ever-increasing dividends. Generally speaking, the states that made the largest *per capita* expenditures for schools a generation and two generations ago are to-day the most prosperous states; the states that were backward educationally a generation or two generations ago are to-day the least prosperous states. These facts in themselves do not prove that the investment of public money in public schools brings a return in kind, but when this evidence is considered in the light of a multitude of other facts, the testimony is overwhelming.[3] Good schools and material prosperity stand to one another as cause to effect.

The sources of school funds. — The public schools of the United States are supported chiefly by taxation within the local unit. In many of the states, the "unit" is the school district; in other states (particularly in New England) it is the town; in a few states, it is the Congressional township;[4] and in most of the southern states it is the county. All of the states provide some-

[1] According to Miss Newcomer's monograph (*op. cit.*, p. 36)) the total state and local educational expenditures in 1920 amounted to 0.4 per cent of the nation's wealth.

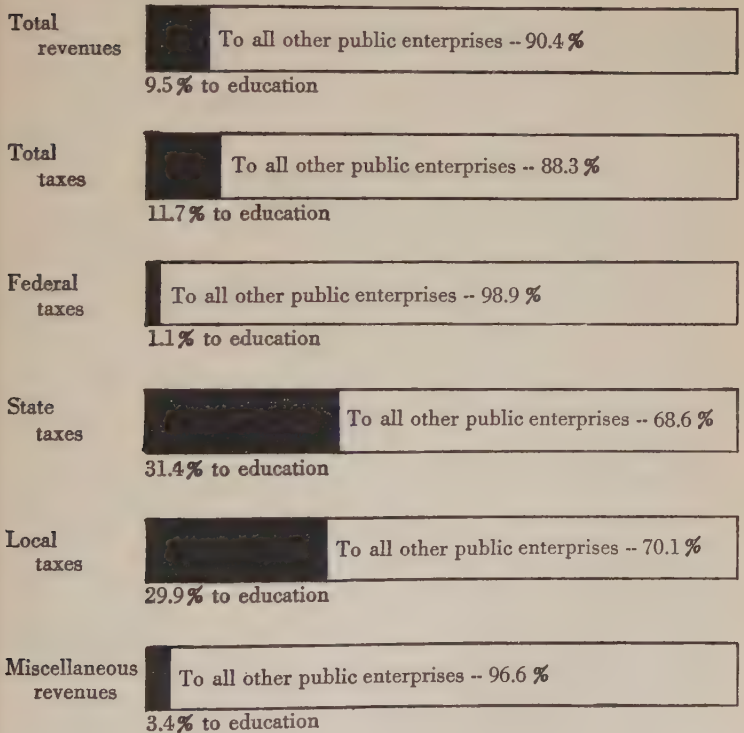
[2] The national income for 1922 has been estimated at $59,000,000,000 and the total national wealth at $320,803,862,000.

[3] See an article entitled, "Do Good Schools Pay?" in the *Journal of the National Education Association*, June, 1923.

[4] The Congressional township is typically an area six miles square, and is so called because Congress in providing in the Land Ordinance of 1785 for the survey of the western lands found this a convenient unit of area with which to deal. The "towns" of the New England states are similar areas, but they vary in size and in shape. As units of school taxation and control, however, the "town" and "township" are practically identical in their significance.

thing for the support of public schools from general State taxation.[1] These amounts vary from 1.5 per cent

Per cent of Public Revenues Devoted to Education and to All Other Public Enterprises, 1920


Total revenues
To all other public enterprises -- 90.4 %
9.5 % to education
Total taxes
To all other public enterprises -- 88.3 %
11.7 % to education
Federal taxes
To all other public enterprises -- 98.9 %
1.1 % to education
State taxes
To all other public enterprises -- 68.6 %
31.4 % to education
Local taxes
To all other public enterprises -- 70.1 %
29.9 % to education
Miscellaneous revenues
To all other public enterprises -- 96.6 %
3.4 % to education

of the total school revenues in Iowa to 54 per cent of the total school revenues in Texas. Taking the country

[1] The accompanying graph has been prepared from data presented in Mabel Newcomer's *Financial Support of Education in the United States*, p. 49.

as a whole, 78 per cent of the cost of maintaining public schools is met by taxation within the local unit (whether district, town, township, or county); 14 per cent is borne by general state taxation; 2.7 per cent comes from interest on permanent funds and the rental of school lands;[1] and 5.2 per cent from various other sources.

Until very recently, the Federal government has not contributed from its tax-revenues to the annual expense of maintaining public schools, although from the outset it has donated public lands to newly admitted states as an endowment for public schools and since 1890 it has made money-grants for the support of State agricultural colleges. Under the terms of the Smith-Hughes Act, passed in 1917, a maximum[2] of $7,000,000 may be distributed among the states each year to encourage vocational education in the high schools. Thus a very small part of the cost of maintaining public schools is now met from Federal tax-revenues.

Inequalities and inequities in school support. — The American public school, then, depends chiefly upon

[1] One of the most interesting chapters in the history of American education is that which concerns the school lands and the permanent school funds of the several states. In the Land Ordinance of 1785, Congress provided that one section (640 acres) in each township should be set aside for the support of schools. In every state that has been created from the public domain (that is, from the lands owned by the United States as a whole), this provision for public schools has been made. An additional section was provided in the states admitted from 1848 on, and in the case of Utah four sections in each township were reserved as school lands. The permanent state school funds of most of the western states have been formed chiefly from the sale of these lands, while states that have not sold their school sections derive part of their school revenues from the rental of the lands. For a brief account of this and of other sources of permanent public-school funds, see Keith and Bagley's *The Nation and the Schools*, Macmillan, 1920, chs. ii, iii, iv, vi, and vii. A much more detailed and comprehensive study of the problem will be found in Swift's *Permanent Public Common-School Funds*, Holt, 1911. The author of the latter volume, Fletcher H. Swift (born 1876) has made several important contributions to the study of the history of education. He has been a professor in the University of Minnesota since 1909.

[2] The amount distributed in 1923 was slightly in excess of $3,000,000.

local support for its maintenance and its progress. This means that there will be striking inequalities among the schools not only throughout the country but within each state. Writing in 1922, George D. Strayer[1] made the following contrasts:

> "The states vary greatly in their ability to support education. From the latest available data the true wealth *per capita* is found to vary in the several states from $726 to $5038. The contrast is quite as startling if the true wealth per pupil enrolled in schools is taken. Here the variation runs from $2561 to $19,377."[2]

The variations in taxable wealth in a single state are typically illustrated by the diagram[3] (page 304), which compares fifteen counties in Pennsylvania with reference to the amount of wealth that can be taxed for school purposes in proportion to the number of children in each county.

Within a county, too, there are obvious inequalities of taxable wealth. Generally speaking, the cities and towns will have larger resources in proportion to the population than will the open-country districts. Between adjoining open-country districts, indeed, there may be wide differences in taxable wealth, — as when, for example, one district has within its borders rich alluvial lands, mineral deposits, coal mines, oil wells, or

[1] George Drayton Strayer (born 1876) is a leading authority on school finance and other phases of school administration. Since 1907 he has been a professor in Teachers College, Columbia University. He served as chairman of the Emergency Commission of the National Education Association during and immediately following the War. This Commission drafted the bill providing for Federal aid to the states in support of public-school education which is still pending in Congress.

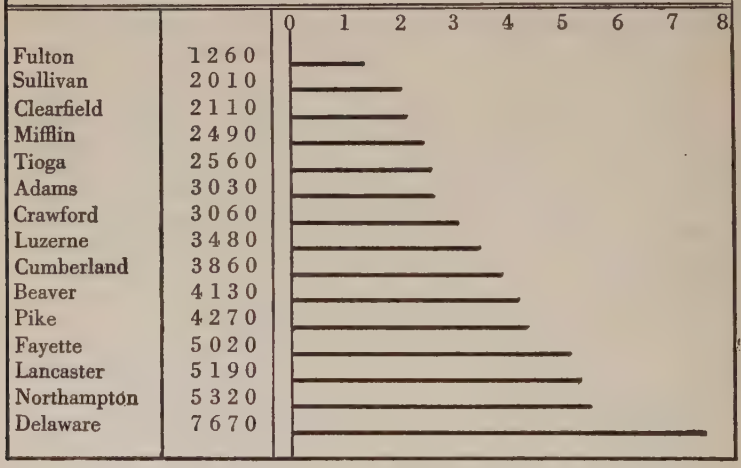
[2] "Report of the Legislative Commission of the National Education Association," *Journal of the National Education Association*, October, 1922, p. 312.

[3] From H. Updegraff: "Application of State Funds to the Aid of Local Schools," *Sixth Annual Scholomen's Week Proceedings*, pp. 134 ff. University of Pennsylvania, 1919.

other wealth-producing resources which its neighbor lacks. If the school district is the principal taxing unit school purposes, it is clear that there may be extreme

DIAGRAM

Showing amount of money behind each child for school purposes in 15 Counties in Pennsylvania **1916**



inequalities of educational opportunity within a relatively small area.[1]

Equalizing educational opportunities. — These wide variations in the amount of wealth available in different

[1] The inequities involved in the wide variations among communities with respect to their ability to support schools were first clearly pointed out by Dr. E. P. Cubberley in his monograph, *School Funds and Their Apportionment* (1905). Dr. Cubberley (born 1868) is one of the most distinguished contemporary students of education. For more than twenty-five years he has been a teacher in Leland Stanford, Jr., University. He is the author of *Public School Administration*, (Houghton Mifflin, 1915), *Public Education in the United States* (same publishers, 1919), and numerous other books.

communities for the support of schools have led to various proposals aimed toward an "equalization of educational opportunity." These proposals are based on the belief that a democracy which depends for its safety and progress upon the trained intelligence of all of its citizens cannot afford to let any child within its borders suffer from inadequate schooling. Under this theory, the child in a remote and isolated rural school is just as significant to the welfare of the state as a whole as is the child in a rich and prosperous town or city. In short, every child is either an asset or a liability to society as a whole. In so far as education can change liabilities into assets, it is to the advantage of society as a whole to make the investment.

The solution of the problem is best sought, it is generally believed, through the establishment of larger taxing units for school purposes. A town or township tax tends to equalize educational opportunities among the school districts of the town or the township; a county tax tends toward a similar equality among all the schools of the county; a state tax tends to equalize educational opportunities within the state. This is as far as the equalization theory has as yet been carried in this country (except for the provisions of the Smith-Hughes Act) but it is clear that a Federal tax would likewise tend to equalize educational opportunity among the several states.[1]

[1] Probably the clearest expression of the principle of equalization is to be found in G. D. Strayer and R. M. Haig: *The Financing of Education in the State of New York* (report of the Educational Finance Inquiry Commission), p. 173. Macmillan, 1923.

"There exists to-day and has existed for many years a movement which has come to be known as the 'equalization of educational opportunity' or the 'equalization of school support.' . . . In its most extreme form the in-

The Control of Public-School Education

Units of control: *The local unit.* — Just as the support of public schools is largely provided by the local community, so the control of schools is chiefly in the hands of local school boards the members of which are usually chosen by the voters of the community, except in some cities, where school-board members are appointed by the mayor. In most of the southern states, the control of all schools within a county is delegated to a county board of education.

The state as a unit of control. — Legally, the control of public education in our country is one of the "sovereign powers" reserved to each of the states, and the local control which actually operates does so merely because most of the states have delegated this sovereign power to the smaller units. Gradually certain elements of control are being brought back to the state as such. In most instances to-day the educational authorities representing the state as a whole license or certificate the teachers, — sometimes all of the teachers, more frequently only those desiring the higher grades of certificates. The states, too, as a rule make certain uniform requirements with regard to the minimal length of school term. In some cases, the educational authorities of the states have the power to condemn school buildings

terpretation is somewhat as follows: The state should insure equal educational facilities to every child within its borders at a uniform effort throughout the state in terms of the burden of taxation; the tax-burden of education should throughout the state be uniform in relation to tax-paying ability, and the provision for schools should be uniform in relation to the educable population desiring education. Most of the supporters of this proposition, however, would not preclude any particular community from offering at its own expense a particularly rich and costly educational program. They would insist that there be an adequate minimum everywhere, the expense of which should be considered a prior claim on the state's economic resources."

when these are unsafe or insanitary, to provide for courses of study that will be uniform throughout the state, and (more rarely) for uniform textbooks. All of the states have laws requiring the compulsory attendance at school of all children between certain ages, usually between eight and fourteen. These laws vary widely with regard to length of time that such children shall attend school each year, and they also vary widely in the rigor with which they are enforced. Generally speaking, compulsory-attendance laws throughout the country are well enforced in the large cities; except in a few states the enforcement of these laws in the villages and rural districts is extremely lax.

The relation between support and control. — The interest of each local community in the schools that are provided for its children is obviously an important factor in determining the efficiency of the schools, and it is clear that some measure of local responsibility for schools is one important means of insuring local interest in schools. Throughout our national history, however, the principle of local or neighborhood autonomy has been in conflict with the ever-increasing need for stronger state governments. At the present time, the conflict is perhaps most in evidence in the field of education. The traditions and prejudices of the people are in favor of the local support and local control of schools; but the local support of education results in glaring inequalities of educational stimulus and opportunity, as we have just seen. Poor schools anywhere in a state impede the progress of the state as a whole; poor schools in any state impede the progress of the nation as a whole.

How shall the problem be solved? Is it possible to have larger units of school support which will tend to equalize educational opportunity and still retain the virtues that lie in the local control of schools?

The solution: Relatively small units of control; large units of taxation. — There is a general conviction among students of the problem that this adjustment is thoroughly feasible. It is not seriously proposed in any state to have the control of public schools entirely centralized in the state education department. This would mean that the state authorities would not only license teachers, but also appoint them; that they would build and own all school buildings; that they would control the courses of study and the textbooks; and that the people of each local community would have nothing to say about their own schools except through their representatives in the governing bodies of the state. There is a general belief that so extreme a form of centralization would mean a deadening uniformity that would stifle the interest of the people in the schools that their children attended; and that consequently whatever improvements centralized control might bring would be more than counterbalanced by this negative factor. And if this is true of state control, it is clear that anything even remotely approaching a national control of education in this country is unthinkable.[1]

[1] Anything approaching the control of public-school education by the Federal government would be impossible without an amendment to the Constitution. The Federal government has only those powers that are explicitly granted to it by the several states, and the Tenth Amendment, adopted in 1791, makes the following provision: "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." The Constitution nowhere contains a reference to education; not even the word is mentioned.

The policy that the states have adopted is to contribute through general state taxation to the support of local schools, still leaving the local communities free to control the schools except as to fulfilling a few fundamental standards such as have already been referred to. The policy of the Federal government in so far as its recent small cash contributions to the support of education are concerned has been to require that the states, as a condition of accepting the Federal money, appropriate from their own funds a similar amount for the same purposes. Thus participation in the support of local education has been established by most of the states without involving a measure of centralized control that will check in any way local initiative and local responsibility, and the precedent has been set for a similar participation by the nation that will in no way encroach upon the sovereignty of the several states.

Professional Organizations of Teachers

No account of American educational systems would be even relatively complete without a reference to the work that is being done by voluntary organizations of teachers. These organizations have increased very remarkably in number and in influence with the development of a relatively permanent teaching-personnel for the public schools and with the progress of professional education for teachers. (See Chapter I.)

State, sectional, county, and local organizations[1] — Every state now has its association of teachers, and in some cases the association enrolls a large proportion of the public-school workers of the state. Many of the state

associations employ full-time secretaries and publish their own journals.[1] Almost without exception, the state associations have legislative committees which propose laws for the betterment of the schools and carefully scrutinize all proposed measures that affect education.

Many of the state associations are now so large that the members can no longer hold a single annual meeting (chiefly for the reason that few cities have hotel accommodations or auditoriums sufficient for the numbers attending). As a result the tendency is to divide the association into sections representing various areas of the state. Each sectional organization or division elects delegates to attend the state meeting, which thus becomes a representative body concerning itself largely with the consideration of general policies related to the welfare and progress of education in the state as a whole. In some cases this division is carried still further, and branches of the state association are organized in counties and in local communities. Often, too, county and local organizations are formed quite independently of the state associations.

[1] The development of educational periodicals has been an important chapter in American education. The progress of the public-school movement in the third quarter of the nineteenth century was profoundly influenced by *The American Journal of Education*, which was established in 1855 by Henry Barnard (1811–1900), and which was edited by him and published largely at his own expense over a period of twenty-five years. Earlier in his life, Barnard had been Secretary of the Connecticut State Board of Education, and rendered to that state services quite analogous to those that Horace Mann (see footnote, p. 11) rendered to Massachusetts. In 1867 he became the first Federal commissioner of education. By far the most notable figure to-day in American educational journalism is Albert Edward Winship (born 1845), who became editor of the *New England Journal of Education* (later the *Journal of Education*) in 1888. Dr. Winship has made it a practice to keep in close touch with schools throughout the country, and undoubtedly has a far more extensive first-hand acquaintance with American education than has any other person. He has been a powerful factor in welding the teachers of the country into a united profession and in discovering and recognizing meritorious work.

National organizations. — The fact that public education in America is almost entirely under state and local control (see pp. 306.) would suggest at first glance that there is little unity of educational effort among the several states. This inference is in many ways unwarranted. While there is no official system[1] of education for the nation as a whole, there is a large measure of unified action which has brought about a desirable uniformity in aims and materials without involving the deadening uniformity which often goes with a highly centralized official organization.[2] This has been one of the most notable achievements of American education, and it has been made possible chiefly through the national organizations of public-school workers.

The National Education Association. The largest organization of teachers in the world is the National Education Association of the United States. This was founded as the "National Teachers Association" in 1857, and assumed its present name in 1907 when it was incorporated under a special act of Congress. Originally an annual gathering of a few educational leaders, it has during the past thirty years extended its membership to include larger and larger representations of classroom

[1] Note that the title of this chapter is not "The School System," but "School Systems." Legally, there are forty-eight school systems, each representing a state.

[2] The advantage of a certain measure of uniformity will be apparent from the discussions in the earlier chapters (especially chs. ii, iii, and iv) which emphasized the importance of a "community of culture" as a basis for establishing the "social binders" which hold large groups together in a unit. The belief of most American students of education is that this essential uniformity can be attained without identical programs and policies in all of the states, and without what would be in any official way a national school system. The public-school workers of the country, however, are overwhelmingly in favor of such a degree of official national *leadership* in education as would be provided by the creation of a Federal department of education the head of which would be a Secretary of Education who would have a seat in the President's Cabinet.

teachers. It is now governed by a Representative Assembly elected by the state, sectional, and local associations of teachers that are affiliated with it. At the same time, its own active membership is independent of the latter associations; this membership numbered in 1924 more than 140,000. The Association comprises a large number of departments (twenty-one in 1924), each representing a specialized field of the educational service, such as administration (the "Department of Superintendence"), elementary education, secondary education, higher education, rural education, vocational education, and the like. It maintains its national headquarters at Washington, where it has a staff of nearly seventy-five salaried employes, including secretaries, editors, research workers, and field and legislative agents. Through its departments, its committees and commissions, and its headquarters staff, as well as through two great annual meetings (one in February and one in June), it exerts a powerful influence on educational development. To a greater extent than any other agency it has operated to bring the educational forces of the country together in a working unit.[1]

[1] Among the leaders in the early development of the National Education Association were S. S. Greene (1810–1883), for many years superintendent of schools in Providence; J. P. Wickersham (1825–1891), who rendered yeoman service in developing the public-school system of Pennsylvania; Emerson E. White, widely known as an author of books for teachers; and William Torrey Harris (1835–1911), whose work as superintendent of schools in St. Louis, and later as Federal Commissioner of Education, made him an outstanding figure in the history of American education. In the recent development of the Association, the following persons have played a large part: Ella Flagg Young (1845–1918), who became superintendent of schools in Chicago in 1908, and was the first woman to be made the head of a large city school system; Carroll .G Pearse (born 1858), president of the Milwaukee State Normal School from 1913 to 1923; William B. Owen (born 1866), formerly associated with the University of Chicago and since 1909 principal of the Chicago (city) Normal College, who was primarily responsible for the organization of the Representative Assembly; G. D. Strayer (see footnote, p. 303); and James W. Crabtree (born

Other national organizations. — A large number of national organizations devoted to education are independent of the National Education Association, although many of them coöperate with the Association in its efforts to promote educational progress. In some of the larger cities, the classroom teachers are organized in unions and these unions form a national organization, the American Federation of Teachers, which is affiliated with the American Federation of Labor.[1] College and university teachers have a national organization which likewise excludes the administrative personnel, but which is not affiliated with organized labor. Of very large importance, too, are: the National Society for the Study of Education, which meets annually and publishes a series of yearbooks which have had a marked influence on educational development; the national associations of teachers of English, of science and mathematics, and of history; and the national organizations for the promotion of various specific types of education, such as rural education, vocational education, physical education, art education, and the like. Many of these organizations publish monthly journals devoted to the problems of their respective fields.[2] In spite of the official decentralization of education, then, many forces work together to unify educational efforts.

1864), since 1917 secretary of the Association. The remarkable growth of the Association (from 10,000 active members in 1918 to 140,000 in 1924) has been due in large part to the efforts of the four persons last named.

[1] This is the type of organization that has found most favor among the teachers of England. The National Union of Teachers of England and Wales is a federation of this kind. It enrolls upward of 100,000 teachers. In the United States as well as in England, organized labor has given powerful support to the movement for better public-school facilities.

[2] For example, *The English Journal, School Science and Mathematics, The Historical Outlook, The Journal of Vocational Education, The Journal of Rural Education.*

Questions, Exercises, and Problems

1. Classify the schools and colleges with which you are familiar according to the scheme outlined in this chapter.

2. Make a list of the arguments for and against the provision of free, tax-supported schools for liberal education on the secondary level. On the collegiate level.

3. All of the states offer professional education for prospective teachers without making a charge for tuition. Tuition is also either free or very low in the State agricultural colleges. On the other hand, some of the State universities charge substantial tuition-fees in their colleges of medicine and law. What, if any, is the justification for these distinctions?

4. Find how much it costs to maintain each year the institution that you are attending. Divide by the number of students enrolled and find the *per capita* cost of maintenance in terms of each student. Add to this an estimate of the personal expenses (tuition, books, supplies, board, lodging, travel, etc.) that you incur each year because of your attendance at the school. What proportion of the total is being borne by you and your parents, and what proportion is being borne by the public in its support of your school (whether through taxation or voluntary gifts)?

5. How would you answer a person who objected to paying school taxes on the ground that he had no children of his own and that consequently he received no benefit from public money spent on free schools? How would you justify taxing all of the communities of a state in proportion to their wealth for the education of all the children of the state? Would it be just to tax all of the states of the Union in proportion to their wealth for the education of all of the Nation's children?

6. Find where your state stands in comparison with other states as to the proportion of children of school age enrolled in public schools, the average length of the school term, the average daily attendance, the proportion that high-school enrollment bears to total enrollment, and the public expenditures for school *per capita* of the total population. (All of these data will be found in the annual reports of the United States Commissioner of Education, and

a very significant comparison of the states, based on these data, is to be found in L. P. Ayres's *An Index Number for State School Systems*.)

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Chapter XI

PERSONAL QUALIFICATIONS FOR TEACHING

Problem of the chapter. — One who enters a field of professional service will wish to understand, not only the functions that the profession attempts to discharge in the complicated organization of modern society and the way in which it proceeds to discharge these functions, but also the personal qualities that are essential to good work in the field that has been chosen. In the chapters that have preceded, the former problems have been our chief concern; we have now in two concluding chapters to consider as helpfully as we can the personal qualifications of the teacher.

Importance of the problem. — This problem is both important and difficult. It is important because teaching is essentially a personal process involving very intimate personal relationships, and this is especially true of the teaching of boys and girls in the elementary and high schools. In spite of all that has been done in the provision of aids and devices for facilitating learning, — textbooks, pictures, maps, diagrams, models, apparatus, libraries, laboratories, shops, and gardens, — the essential features of a school still remain the living teacher and the living learner. The actual contact of mind with mind is still the fundamental factor in the educative process.

The importance of the teacher as a person goes farther than this, however. Not only is the teacher's personal influence of vital significance to the learner as guide to the conscious and systematic mastery of knowledge and skill, but it is peculiarly basic to the establishment of those fundamental controls of conduct that were discussed in Chapter IX under the head of attitudes, and it is these attitudes that constitute in all probability the most significant features of the important but complex quality that is known as character. This is not to say that the personal character of the individual teacher will inevitably be copied by his or her pupils; on the contrary, some characters tend to reproduce their opposites, — their example, whether "good" or "bad," is resented and reacted against; and there are many characters so colorless that they apparently have no influence whatsoever. It is impossible to lay down a general rule that will cover all cases, but there is no disagreement as to the powerful and positive influence that a strong character *may* exert in the classroom.

Difficulties presented by the problem. — The problem of the personal element in teaching is difficult to solve in part because of its complexity. Our inherited tendencies, our early environment, our school training, the men and women with whom we associate, the sermons that we hear, the books and newspapers that we read, and a host of other factors all combine in varying proportions and with varying degrees of influence to make us what we are. It is difficult in the second place because some of the most potent of these influences strike very deep into impulses that we ourselves may be un-

conscious of, and into experiences that we have forgotten or do not like to recall or would never tell anyone else about for the world even if we did recall them; the *facts*, then, are difficult to get at, and as we have seen (Chapter VI) anything in the way of a scientific solution of a problem must start with facts. A third difficulty lies in the highly resistant character of many of those factors in personality that can be recognized and the importance of which is unquestioned; we may not know whether these are due to heredity or to experience, but there can be no doubt that they are pretty firmly fixed by the time that the individual reaches maturity, and that they can be changed only with the greatest effort if at all.

It is well to have all of these difficulties in mind, but it would be most unfortunate to be permanently discouraged by them. The difficulty of a problem must always be looked upon as a challenge to a more vigorous attack rather than as a summons to surrender. Scientific investigation has not as yet given us thoroughly dependable precepts and principles regarding the elements of personality that make for success in the work of teaching, but it has made a start and its efforts are being continued. It is for us to take whatever meager results are now available from these investigations, and — pending further light — "piece them out" as best we may through careful reflection guided by "common sense" (if we possess this important exemplification of the very thing that we are talking about!) It is in this spirit and under these limitations that we shall discuss in this chapter the *general* personal qualifications of the

teacher, and in the following chapter the specific personal qualifications that are important in the specialized fields of the teaching service.

Personal qualifications loom large in the selection and appointment of teachers. They are also frequently referred to by superintendents, supervisors, and principals in their efforts to "rate" teachers, — that is to assign to each teacher under their supervision a grade or mark that will indicate roughly his or her value to the school, the community, and the profession.[1]

Little significance attaches to the order in which these qualities are listed in the following discussion, except that those which seem to be the more readily amenable to improvement appear first.

Personal appearance. — Since the teacher is being observed during four or five hours every day by twenty children or more there is something beyond whim or sentiment in the frequency with which the factor of

[1] A pioneer study of the qualities that go to make up a "good teaching personality" was made by Dr. F. L. Clapp in 1913. He first secured from one hundred experienced superintendents and principals a list of the ten qualities that each judged to be the most important constituents of a good teaching-personality. He combined these judgments on the basis of the frequency with which each quality was mentioned, and thus obtained a list of the ten qualities that had, so to speak, the highest number of "votes." He then submitted this list to one hundred forty superintendents and principals, and asked them to rank their five best teachers, first in the order of their "general teaching personality," and then in the order of their standing with reference to each one of the ten specific qualities. He thus secured, not only a combined judgment as to what successful supervisors believe ought in theory to make up a good teaching-personality, but also the order in which these qualities actually appeared in a group of teachers recognized as superior from this point of view. The final order in which the ten qualities ranked was as follows: (1) address, (2) personal appearance, (3) optimism, (4) reserve, (5) enthusiasm, (6) fairness, (7) sincerity, (8) sympathy, (9) vitality, (10) scholarship. It should be remembered that *all* of these factors were found to be very important; the ranking simply indicates *relative* importance as this was revealed in the actual judgments made by persons responsible for choosing teachers and evaluating their work. (A summary of Dr. Clapp's study will be found in W. C. Bagley's *School Discipline*, Macmillan, 1914, ch. ii.)

personal appearance is mentioned on rating cards and in the studies that have been made of the teacher's personal qualifications. Generally speaking, the expectation is not that all teachers shall be beautiful if women or handsome if men. Pronounced physical defects or deformities, however, are justly considered to detract from a teacher's personal influence, particularly if they are of such a character that the pupils become irritated or distracted from observing them.

More important in many ways, and chiefly because it is relatively simple to improve them, are the factors of personal neatness and of good taste in dress. Again it is the distracting influence either of untidiness in the person or of extreme fashions in dress that is most significant in this connection, although the positive effect of setting a desirable standard is not to be disregarded. Happily the normal schools and teachers colleges are coming to give explicit attention to these factors through their departments of household arts and health education, and through personal conferences with student-teachers in the training schools.

Health, vitality, and physical control. — The significance of sound health to good work is obvious enough in all human callings. We are concerned here particularly with the effect of health upon the qualities that go to make up a good "teaching personality," and it is clear that all of the factors listed in this chapter may be markedly weakened by poor health. Fortunately we are living in an age that recognizes good health as a fundamental asset, not only to the individual, but to society, and the attention that is being given to health education

in all professional schools for teachers makes unnecessary an extended treatment of the topic here.

A related factor, however, is entitled to high rank as one of the most important qualities of an effective teaching-personality. One may have perfect health and still fail to express one's self in such a way as to suggest vigor, energy, and "vitality." There can be little doubt that these outward indications of health and strength are often important in determining the subtle influence that personality exerts. A heavy, impassive, immobile countenance is likely to be a serious handicap in any calling which involves direct personal relationships. Carriage and posture are important for the teacher in part because the example that is set for imitation is especially significant in learning to coördinate movements. There is, too, an undefined but clearly recognized relationship between physical attitude and mental activity. Assured and confident physical control as expressed in the erect posture and the alert movement suggests mental strength and mental alertness just as clearly as the slouchy posture and the slow, uncertain movement suggests a lazy mind; while jerky, nervous, and useless movements suggest undirected or "flighty" mental activity. It is true that the suggestion may be deceptive, but its effect is in no way mitigated by its deceptive character.

The voice. — It would be difficult to overestimate the value to the teacher of good "teaching voice," and it is well to know that such a voice can be developed by a great many teachers who, without attention to this important item in their professional equipment, would

be very seriously handicapped. The best voice for classroom teaching is one that is clear and pleasantly toned, fairly even in general pitch and yet capable of modulation and "coloring" to express different shades of meaning and emphasis. The principal evils to be avoided or corrected are: (1) the shrill, high-pitched, rasping voice; (2) the unnecessarily loud or "noisy" voice; (3) the inarticulate voice which fails to enunciate distinctly; (4) the thin, feeble voice which lacks vigor and force; and (5) the monotonous, colorless voice which lulls the listener to somnolence through lack of emphasis. Speaking too loudly, too rapidly, and too indistinctly are common teaching faults. The "noisy" voice is especially unfortunate, for, by suggestion, it almost always gives rise to noise and confusion in the classroom. The feeble voice, the inarticulate voice, and the monotonous voice are usually amenable to treatment through appropriate exercises a schedule of which the voice specialist in the normal school or teachers college can readily prescribe. Attention to this apparently small detail of the teacher's equipment may make all the difference between failure and success.

Social intelligence. — The term "social intelligence" is frequently employed to denote certain qualities that have an important bearing upon success in life, but which are apparently somewhat independent of the factor of "general intelligence" discussed in Chapter VII. It has been found, for example, that the leaders among pupils and students are not always the boys and girls with high intelligence quotients; the latter, indeed, are sometimes markedly deficient in social qualities. Nor is it always

the brightest men and women who achieve the most notable success in life, especially in fields that demand frequent and important social contacts. There are some recognized qualities making for success in teaching that can clearly be classed as factors of social intelligence, and most of these have a close bearing upon the problem of personal qualifications.

Address. — This quality stands first among the ten constituents of a good teaching personality studied by Dr. F. L. Clapp.[1] It refers to the way in which one meets people, and has been found (as one would expect) to be an especially important factor in the art of salesmanship which has in recent years been very cleverly analyzed by the psychologists. It is no less important in teaching, for the teacher must meet people continually, and his success depends in no small degree upon the personal impression that he makes. In one way, his task is infinitely harder than that of the salesman, for he must continue to sell goods to the same customers four or five hours each day, and five days each week, throughout the school year; but he may have the advantage of the commercial salesman in knowing that he will have other chances if his first efforts fail!

Tact. — This seems to be one of the prime qualities of social intelligence. While tact is a term that can scarcely be defined in a helpful way, it seems to be at basis the ability to put one's self in another's place, — a sensitiveness to the situation as it appeals to others. Professor G. H. Palmer [2] in emphasizing the importance

[1] See footnote, p. 319.
[2] In *The Ideal Teacher*, pp. 8 ff. Houghton Mifflin, 1909.

of having the teacher understand the learner's point of view has used the term "vicariousness" with an analogous but not an identical meaning. We are using the term tact with reference not so much to the recognition of the learner's limitations in knowledge and experience as to a sympathetic appreciation of his feelings.

Sympathy. — This quality is obviously related to tact in so far as its psychological basis is concerned. It involves the ability to feel as others feel, and in this sense it is one of the most important and powerful of the social "binders." As used in ordinary speech the term refers rather to the expression of the sympathy than to the feeling itself. A sympathetic person is usually thought of as one who is openly demonstrative in his sympathy, and because of the ease with which true sympathy may in this way be simulated, it is essential to recognize that sympathy as an attribute of a good teaching personality is not always or necessarily of the "gushing" and demonstrative type.

Dr. W. F. Book[1] once collected from nearly six hundred high-school pupils statements describing the qualities represented by sympathetic teachers. The following qualities are given in the order of their importance as indicated by the number of times that they were mentioned in the replies; the figures in parentheses are the number of "votes" for each group of related qualities:

1. Kind, forgiving, and generous; or, stated negatively, never rude, harsh, sarcastic, or given to ridicule. (144)

2. Pleasant, cheerful, good-natured, happy, jolly, even-tempered; or, never cross or unpleasant, never scolded, criticized harshly, or continually found fault. (112)

[1] W. F. Book: "The Teachers that Pupils Like," in *Pedagogical Seminary*, vol. xii, 1905, pp. 239 ff.

3. Patient, considerate, thoughtful of the feelings of pupils, reasonable; not "cranky," over-particular, or unreasonably strict. (104)
4. Firm, decisive, businesslike, and strict. (59)
5. Inspiring, easy to approach. (46)
6. Serious, earnest, unassuming, rather dignified, quiet. (26)

Leadership. — A most important quality under the general head of social intelligence is leadership. In speaking of the socialized recitation (pp. 206 f.) we noted the change from the older conception of the teacher as an autocrat and a taskmaster to the modern conception of the teacher as leader, a counselor, and a guide. Back of this change is a fundamental transformation in the attitude of the profession and of many laymen toward the pressures that should be used to incite pupils to the mental effort that learning involves. Compulsion and coercion in any form are coming more and more clearly to be discredited in school work, and many things that could formerly be exacted from pupils merely by arbitrary command must now be gained in another way. A favorite characterization of the approved method is to refer to it as the "leadership" of the teacher. "Leadership," however, may be of various sorts. Just as one may simulate the fine qualities that true sympathy implies, so one may very easily get others to do what one wishes by flattery, cajolery, or the judicious distribution of personal favors (which is one form — and a most reprehensible form — of bribery). Coercion and compulsion are thereby avoided, but it is very questionable whether something infinitely worse has not taken their place. The type of leadership that the teacher personifies must clearly be of another sort if the

transformation of the modern school is not to represent an involution backward rather than an evolution forward. It must be a leadership that depends for its force and effectiveness upon real strength of character and upon a mastery of the situation that others will inevitably respect, — a mastery, too, that is shot through with a deep and true sympathy. To achieve "leadership" in the sense of a superficial "popularity" is not at all difficult — but it is to play a game that in the end will not be worth the candle.

Moral qualities. — We come, then, to the personal qualifications for teaching that must always be recognized, we believe, as the deepest and the most significant. We shall call these the "moral qualities," but we have in mind something far more fundamental than that which is usually included under the term "good morals." It goes without saying that the teacher should respect and reflect the simple but basic standards that have been recognized and refined through the ages as constituting the "minimal essentials" of a decent and refined life. But important as are these basic standards, to live consistently with them may involve no more than the absence of evil rather than the presence of a positive and creative virtue. It is the latter quality that we are emphasizing, and to some of the expressions of this quality we shall now turn.

Sincerity. — One difficulty with the qualities that were listed under "social intelligence" lies in the fact that they may be deceptive indices of what lies underneath. An engaging way of meeting people may make a good impression but it may also express an apparent interest

in other people that has no fundamental reality. A tactful person, too, may let his desire to be tactful go so far that he has no positive convictions or opinions of his own; he simply finds out what other people expect to have said to them, and then he says it regardless of its truth or falsity. Sympathy, as we have seen, may be simulated, and a certain kind of "leadership" may be purchased by the bribe of flattery or favor. All of these arts may make for a certain kind of success in life, for modern civilization is highly socialized, and almost every field of effort demands frequent contacts with others. All of these arts may make for a certain kind of success in teaching. The very encouragement that is thus given to hypocrisy, however, suggests that the attitude which is called sincerity should have a basic recognition. Of all the virtues that are important in life, is not this the one that strikes deepest? Certainly of all of the virtues that are important in the teacher no other is so fundamental and far-reaching.

Loyalty. — This is another sterling virtue that deserves a high rank among the personal qualifications of the teacher. The importance of personal loyalty to the family, the tribe, and the clan has been recognized almost from the outset of social life, and the most primitive forms of education have sought to instill such loyalty in the minds of the young. It is another of those "social binders" which we have already found to be so important as educational objectives. It lies at the basis of that mutual trust and interdependence which are the very soul and essence of group life. Without a widespread inculcation of the ideal of loyalty, social coöpera-

tion would be limited to those critical occasions when the need of working together is clearly necessary to individual survival. But a continuing society must be held together, not only on these critical occasions, but also during the intervals that separate them if the critical occasions themselves are to be met successfully.

The attention that has been given to the development of loyalty in all forms and systems of education suggests that this trait in all probability must be explicitly developed if its existence is to be insured. In other words, even if there be an instinctive impulse which makes for loyalty,[1] this is not apparently strong enough or pervasive enough to be depended upon. It must be reinforced and strengthened by definite instruction, training, and inspiration. It is also probable that loyalty is not to be regarded as a "general" trait, but that the real need is for the development of specific types of loyalty.

What are some of these specific loyalties that are needed in teaching? Quite obviously, the first and foremost is a whole-hearted devotion to those for whom one is responsible. The primary duty of the teacher is to his pupils or students. Their needs and their best interests must receive his first consideration. This loyalty, too, must be just as impartial as it is possible to make it.

There are many ways in which this specific kind of loyalty expresses itself. Many if not most teachers take a deep, personal interest in their pupils, and desire earnestly and sincerely to help them. Sometimes, however, this desire seems to be thwarted on

[1] See the discussion of "social instincts," Chapter VII.

every side, and the teacher becomes cynical and depressed, perhaps giving an unfortunate expression to his or her feelings in sarcasm and ridicule. At other times, individual pupils may resent just and reasonable demands and thus cultivate a marked dislike for the teacher which the latter is tempted to return in kind. It is in situations akin to these that the ideal of loyalty must be consciously and explicitly directed toward the control of the teacher's conduct and feelings. Above all, it is necessary to keep the personal element from operating in a negative way. Personal devotion there must be, but personal dislikes and prejudices must be ruthlessly read out of the problem.

Another important expression of the ideal of loyalty is in the care with which the teacher avoids "gossiping" about his or her pupils. The knowledge that a teacher has of the weaknesses of those who are intrusted to his or her care is a privileged knowledge, quite akin to the knowledge that the physician has regarding the physical condition of his patients, or the knowledge that the lawyer has regarding the business affairs of his clients. It is a fundamental ethical principle of the professions of medicine and law that such knowledge must be held inviolate, and physicians or lawyers who are unfaithful to this trust are not only discredited but may even be denied the right to practice their professions. Equally rigorous standards are clearly applicable to the profession of teaching.

A second specific type of loyalty is that which safeguards the integrity of the system in which the teacher works. This includes, first, loyalty to duly constituted authority as this is represented in the officers of the school system. Such loyalty may be personal, but it is essentially something more than personal, and is urgently necessary even when personal loyalty for one reason or another has been sacrificed. It should never be interpreted to mean that the teacher should silently acquiesce in policies and practices that he or she knows to be wrong; it does mean, however, that a refusal to

work in harmony with the system should be open and above-board and not silent and insidious.

Expressions of a most unfortunate type of disloyalty are sometimes found among teachers who otherwise may be not only very efficient but thoroughly high-minded. The local control of most American schools distinctly encourages some most unfortunate practices of this sort. Recognizing the power that certain members of the community may exert in school affairs, the teacher is often tempted to secure advancement in the system by cultivating the favor of these influential people. Sometimes he will "go over the heads" of his principal and superintendent and gain the ear of a member of the school board. This is a quite different thing from appealing to the school board against some ruling or policy that the school officials have set forth. The latter is a thoroughly legitimate step to take, but it should be taken in accordance with regularly constituted procedure. Members of school boards have no authority over the schools *as individuals*, and for teachers to deal with such members as individuals is a direct violation of the plainest ethical principles. The offense is compounded if such dealings are carried on "in the dark," so to speak.

Another frequent expression of disloyalty is in yielding to the temptation to curry favor with one's pupils by taking their side in little conflicts with those in authority. The principal or the superintendent may find it necessary, for example, to make some rule or restriction which the pupils do not like. The teacher in announcing the fact or in commenting upon it may say that this is not *his* rule and imply that, if *he* were in the position of authority, he would not make it. The element of disloyalty in action of this sort is obvious enough when one stops to consider it, and the function of a well-developed ideal of loyalty is to insure that one will consider it.

Loyalty to one's fellow-workers is an indispensable factor in a smoothly working social order. Effective coöperation, as has been suggested, depends upon mutual trust, and anything that promotes envy, suspicion, or

other forms of distrust is likely to play havoc with an enterprise that depends upon coöperative effort.

Conspicuous examples of the spirit of loyalty to one's fellow-workers are found in the readiness with which teachers recognize good work in other teachers, especially in speaking of such work to their pupils or to members of the community. On the other hand, there is strong temptation sometimes indirectly or even explicitly to call attention to one's own efficiency by contrasting it with what one considers the inefficiency of others. As classes pass from grade to grade, their weaknesses are likely to be attributed to the teachers who had charge of them last year or the year before last. In some instances, this claim may have some justification in fact, but so many other factors may have entered into the situation, and the human tendency to blame others for one's own shortcomings is so strong, that the best course is plainly one that avoids most circumspectly anything that smacks of gratuitous criticism.

A final type of specific loyalty is that which is represented by fidelity to the ideals of the profession and a firm faith in the cause that it serves. Educational progress is coming to depend in an increasing measure upon the plans and policies that the profession of teaching constructs, indorses, and sets forth clearly to the public. The profession cannot impose its plans and policies upon the public, and it should not if it could. It must construct and propose educational policies, however, for it comprises the men and women who have the most intimate acquaintance with educational problems, — the men and women whose experience and training qualify them to recognize these problems and to devise methods for their solution. A real responsibility rests upon teachers as a group, then, to work steadfastly and intelligently toward the improvement of schools and the betterment of conditions under which school work is done.

A corresponding duty rests upon each member of the profession to do his share in this great collective enterprise.

Loyalty to the profession, however, strikes deeper than active participation in professional councils, important as this is. As has just been said, the public must acquiesce in the decisions of the profession if these decisions are to be fully effective. Acceptance by the public of the proposals that the profession makes will depend in part upon the clarity with which the proposals are set forth and upon their inherent reasonableness and value. It will depend just as much upon the confidence that the public has in the profession, and the work of every teacher is important in determining the measure and strength of this confidence. Professionally-minded teachers recognize this responsibility. They know that good work wherever done contributes to the good repute of their profession. They know, too, that the individual teacher's faults and shortcomings are likely to be charged up against the profession as a whole. What the average citizen thinks of the teaching profession is almost certain to be determined by what he thinks of Miss *A*, and Mr. *B*, and Mrs. *C*, who happen to be either the teachers of his children or persons whom for other reasons he has come to know personally. In a great many cases, they are the teachers whom he knew in his own school days. The "public estimate" of the teaching profession is nothing but the combined and collective opinion of some millions of average citizens each of whom is thinking of the teaching profession in terms of these concrete personalities. Whenever two thirds or three fourths of the teachers in our schools

do work that commands the respect and commendation of two thirds or three fourths of the "average citizens" with whom they come in contact, especially through their pupils, there will be no question regarding the willingness of the public to acquiesce in any reasonable proposal that the profession may make.

It should be insisted upon that the greatest service that the individual teacher can render his or her profession is to do passing well the work that he is employed to do. It is sometimes said that teachers must be "good mixers" and through this quality achieve social popularity to the end that they may enhance the respect that the public has for the profession. That teachers will find it to their professional advantage to know people outside of their own group and to have social contacts with these people is obvious enough, for this will keep their experience from becoming too narrowly circumscribed, and it will tend in a measure to offset whatever disadvantage there may be in continually dealing with immature minds. It is also advantageous to the school system to have its teachers mingle in the social life of the community. But the kind of trust that the teaching profession needs most is not of the extrinsic kind that might be purchased by personal popularity and good-fellowship. The kind of trust needed is that which rests upon the recognition of good work well done. No amount of "jollying" on the part of engineers, let us say, could compensate for a bridge that "buckled and broke" or for a dam that gave way to the first flood; and no amount of personal popularity on the part of physicians could offset professional inefficiency. If the public respects the professions of engineering and medicine, it is primarily because individual engineers and physicians by the thousands have convinced individual "average citizens" that they know their business and can do well the work that they are expected to do.

The adjustment of conflicting loyalties, and the resulting importance of standards of professional ethics. — In meeting the complicated situations which the work of teach-

ing involves, there will be occasions when one is in serious doubt as to the course that one should follow. Loyalty to one's pupils may seem to conflict with loyalty to the school system or to one's fellow-workers, while one or another of these specific types of loyalty may seem to conflict with more general loyalties, — loyalty to one's friends, or to one's family, or to the state, or to the nation, to say nothing of such fundamental standards as loyalty to truth, or to democracy, or to humanity. While decisions on these important questions will almost always rest with the individual, the profession as a whole can be of real service to all of its members by formulating definite standards of professional conduct based upon a careful study of the situations in which fundamental conflicts most frequently appear. These standards form the "codes of professional ethics" typical examples of which have been worked out and published by several teachers' organizations. Their careful study should be an important part of the professional education of all teachers.

Summary: the cultivation of the general personal qualifications for teaching. — The foregoing discussion has emphasized the personal qualifications for teaching as somewhat distinct from the qualifications that are involved in a mastery of materials and a mastery of technique. The importance of the personal qualifications is attested by the almost invariable custom of those employing teachers to inquire first of all as to the "personality" of the candidates. It is also attested by the frequency with which these personal qualifications appear on the rating-scales that are used to judge

A Student Score Card

	Excellent	Good	Medium	Fair	Poor
I. Physical Characteristics:					
1. Health					
2. Appearance					
3. Carriage—bodily poise					
4. Walk					
II. Use of Language:					
Spoken:					
1. Enunciation					
2. Pronunciation					
3. Quality of voice					
4. Oral discourse					
Written:					
1. Spelling					
2. Handwriting					
3. Sentence structure					
4. Paragraph sense					
III. Student Qualities:					
1. Interest in subject					
2. Preparation for class					
3. Sense of responsibility					
4. Ability to think in class					
5 Attitude toward class criticism					
6. Original questions asked					
7. Contributions made from knowledge learned elsewhere					
8. Sincerity in class work					
9. Honesty in class work					
10. General attitude toward school					
IV. Personal Qualities					
1. Mental alertness					
2. Mental balance					
3. Courtesy—refinment					
4. Common sense					
5. Dress—taste in					
6. Forcefulness					
7. Moral standards					
8. Tactfulness					
9. Truthfulness					

This is a Sample of a Student-Rating Card Used in a Teachers College. The Various Qualities Mentioned May Well Form the Basis of the "Self-Rating" Exercises Proposed in the Text.

the success of teachers. The basic significance of the personal qualifications, however, lies in the fact that teaching and learning involve at their best the direct contact of mind with mind; they are essentially and fundamentally social and personal processes. It is possible in theory to consider educational materials as if they existed in and for themselves. It is possible in theory to consider the technique of teaching as an impersonal art. In actual practice, however, neither the subject-matter of instruction nor the technique of imparting this subject-matter to the learner can be easily separated from the actual, concrete personality of the teacher. It is through the living teacher that the subject-matter becomes for the learner something that is alive and growing rather than something that is dead and inert;[1] and even though the teacher may be "letter-perfect" in his technique of presentation, the effectiveness of his teaching will depend in very large part upon the human qualities that have been discussed in this chapter.

In how far these personal qualities are amenable to improvement through conscious instruction and training, through self-discipline, and through the inspiration of example is an open question; but there are innumerable evidences that teachers can and do grow in

[1] Learning from books is not a complete exception to this rule. The books that wield the greatest influence are unquestionably those that reveal most faithfully the personality of their writers. One may easily recognize in books many of the personal qualities that we have found to be important in teaching, — tact, sympathy, sincerity, and loyalty. In writing as in teaching, the "colorless" personality is handicapped no matter how comprehensive may be the knowledge that is revealed and no matter how thoroughly well the "style" of revealing it may conform to the standards of technique. The most successful writers are those who in their writings are best able to create the illusion of direct, personal contact with the reader.

the "power of personality." The qualities that were discussed under the head of personal appearance, physical control, health, and vitality can in many cases be very definitely influenced by appropriate training. Regarding the elements that make up the important complex that we have called "social intelligence" there is less certainty, although such qualities as address and tact are not entirely beyond one's control. Regarding the moral qualities there is abundant room for hope. Even upon so fundamental a quality as sincerity, a positive influence may be exerted by precept, example, and self-discipline.

Improvement through "self-rating." — Perhaps the most definitely helpful suggestion that has been made up to the present time with reference to the improvement of personality is one which recommends a "self-rating" plan. This was first seriously proposed a few years ago by Dr. Harold Rugg,[1] and its possibilities have been explored and extended with a marked degree of success by Dr. Charters[2] in connection with his study of the problems of training for salesmanship. The procedure is relatively simple. The individual makes a list of the desirable qualities of personality, and then compares himself with others of his acquaintance, giving himself a "grade" or "mark" which indicates his own estimate of his relative standing as equal to, better than, or worse than the average in respect to each quality. If

[1] H. Rugg: "Self-Improvement of Teachers through Self-Rating," *Elementary School Journal*, vol. xx, 1920, pp. 670 ff. (For a reference to Dr. Rugg's work in other fields, see footnote, p. 257.)

[2] See a popular account of this method of self-improvement in the report of an interview with Dr. Charters by M. K. Wisehart, *The American Magazine*, April, 1924. (Further references to Dr. Charters's work will be found in a footnote on p. 217.)

he wishes to do so, it will be helpful for him to "check" the reliability of his own estimates by conferring with one or more persons who know him well, and who are in a position to make a frank and fair judgment. By thus analyzing his weaknesses and points of strength, he will be in a position to work far more intelligently than would otherwise be possible toward a correction of the weaknesses and a further strengthening of those qualities in which he already excels.

Whether or not the student who is planning to enter teaching adopts this self-rating plan, he will do well to seek frank advice with reference to the improvement of the personal qualifications for teaching, and to enter hopefully and resolutely upon the program of training and self-discipline that his counselors may suggest. Such advice, it is clear, must be largely individual in its character, and based upon as careful an analysis as can be made of the elements of strength and weakness that the individual reveals. The importance of this personal service is now distinctly recognized by the professional schools for teachers, and with the intensive study of the problem that is going on throughout the country, there is every prospect that this important phase of the teacher's equipment will receive adequate attention. What we wish especially to urge here is the active interest of the student in the problem and his coöperation in the measures that are being taken for its solution.

The misuse of a "strong personality." — This section should not be concluded without a word of warning with reference to the ease with which a strong and per-

vasive personality may be used for unworthy ends, — and especially for ends the unworthiness of which is not at all apparent at first glance. Miss Frances Morehouse in her book, *The Discipline of the School*,[1] calls attention to the pitfalls that beset the teacher who, through a generous endowment of personal charm and other likable qualities, finds it easy to win very quickly the affections of his or her pupils. The strong temptation is for such a teacher to depend exclusively upon this factor both in matters of discipline and in securing from the pupils the effort essential to effective learning. The results may seem to be most commendable as long as the personal influence of the teacher remains to sustain the good order and the interest; their disastrous character is revealed only when this influence is withdrawn, — when the teacher leaves the school or when the pupils pass on to a higher grade. When that time comes, it is usually clear enough that the "strong personality" of the teacher has actually weakened the pupils. They have become so thoroughly dependent upon this stimulus that they are unable to stand alone. The interest that they displayed in their lessons turns out to be only a borrowed interest and their good order is seen to have been purchased by smiles and kind words. The very ease with which such a teacher may misuse personal influence is likely to blind him to an inexorable criterion of true success in teaching, — namely, the development of an attitude upon the part of one's pupils that will make it *easier and not harder for one's suc-*

[1] Frances M. Morehouse: *The Discipline of the School*, pp. 28-34 ff. Heath, 1915.

cessor to carry on the work. The teacher who boasts that he has taught so well that those who follow him simply cannot "control" the pupils or "interest" them is paying himself a very poor compliment.

Questions, Exercises, and Problems

1. In terms of the "personal qualifications" that are set up in this chapter, evaluate your previously made summary of the qualities of a good teacher. (See exercises suggested at end of Chapter I.)
2. Evaluate yourself by making an estimate of your qualities on the rating-card reprinted on page 335. In which of these qualities have you within yourself the power to improve?
3. What extracurricular activities in the life of the school which you attend made for or marred the development of these personal qualifications?
4. What cases of disloyalty among teachers have you known about?
5. Reëxamine your earlier analysis (Chapter I) of the best teacher you have known and of the poorest teacher you have known with the purpose of setting forth clearly the causes for success or failure.
6. Secure, if possible, a copy of the Rating Card of the Training School of the institution in which you are a student or the one used in some school system. Study it carefully with the idea of determining whether it is fair and adequate.

Suggestions for Reading

J. B. Sears — *Classroom Organization and Control*, ch. xvi. Houghton Mifflin, 1918.

H. W. Nutt — *The Supervision of Teaching*, pp. 225–229. Houghton Mifflin, 1920.

Frances Morehouse — *The Discipline of the School*, pp. 28–34.

Chapter XII

SPECIFIC QUALIFICATIONS FOR SPECIALIZED FIELDS OF THE TEACHING SERVICE

In Chapter I, attention was called to the fact that the professional education of teachers is now specialized with reference to certain distinct fields or divisions of the teaching service; and in discussing the organization of school systems in Chapter X, the more important of these divisions were referred to. The specific preparation that each of these fields demands is reflected in the corresponding curriculum of the professional school. Each field, too, makes its own specific and peculiar demands with regard to the personal qualifications of the teachers who are to enlist in its service. These may usually be regarded as intensified expressions of certain of the general qualities that have been discussed in Chapter XI. In some instances, however, qualities that have not been emphasized previously in our discussions will deserve attention here.

A liking for the work of a specific field may be a good index of one's personal fitness for it. — Probably the best way to choose a field of work is carefully to study the range of possibilities that are offered, to note the requirements of each, and frankly to appraise one's qualifications in the light of these requirements. This involves something more than merely deciding that

one is "interested" in a certain type of work. An employment may interest one for reasons that are quite extraneous to the character of the work itself, — the rewards that it offers, the people with whom it brings one in contact, the prestige that it gives to those engaged in it. Young people are often attracted, too, by superficial characteristics behind which they do not see a deeper and perhaps a quite different meaning in terms of exacting responsibilities to be faithfully met, disagreeable duties to be discharged day after day, personal slights to be borne in silence, and irritating personalities to be dealt with patiently and smilingly. One needs, then, to ask one's self most frankly whether the favored field attracts because of its extraneous and its superficial characteristics, or whether its attractiveness is really inherent and fundamental. Only under the latter condition can interest be regarded as a trustworthy criterion in selecting an occupation.

Observation of and participation in the work of different fields will lessen the chances of a wrong choice. — In most of the professional schools for teachers, carefully organized courses in the observation of classwork will give to the student an opportunity to study the conditions under which the work of the various fields is done. In a few schools, each student serves for a brief period as a "cadet" in each grade or department of the training school and thus, before making a final choice, supplements the observation by actual participation in the duties that each of the larger fields of the service demands.

As a supplement (and perhaps to some extent as a

guide) to such observation and participation, a brief reference may be made to the specific problems that each of the important fields presents. In doing this, it will be profitable to consider briefly the distinctive function of each field of service in the general scheme of education, and to set forth a few of the outstanding characteristics of children at different stages of their development in so far as these suggest the specific personal qualifications that are needed by the teacher in meeting the peculiar problems that each stage of development involves.

The kindergarten-primary service.[1] — The period of childhood that is represented by the kindergarten and the first two grades of the elementary school normally covers the years from four or five to seven or eight. There are of course important differences between children who are four years old and children who are seven years old; some authorities maintain, indeed, that the period of life from three to six with normal children is fairly unique in its characteristics, while others ascribe distinctive characteristics to the years between six and eight. School practice in this country, however, has not tended toward a sharp division between the kindergarten and the first grade; on the contrary, the recent developments have been toward a blending of the two

[1] The development of the kindergarten in the United States received its first significant impetus from Miss Susan Blow, who in 1873 accepted the invitation of Dr. W. T. Harris, then superintendent of the St. Louis schools, to establish a kindergarten in that city. The recent movement toward fusing the work of the kindergarten and the primary grades has found one of its strongest advocates in Miss Patty Hill, formerly supervisor of kindergartens in Louisville and, since 1905, associated with Teachers College, Columbia University. A prominent student of the psychology of the kindergarten and primary years is Arnold Gesell (born 1880), professor of child hygiene in Yale University.

fields of service, in the belief that many of the methods employed by successful kindergartners can with profit be extended to the first grade and even to the second grade, and that some of the work formerly reserved for the first two grades can be undertaken earlier.

The significance of the kindergarten-primary service lies in the fact that it is responsible for starting aright the processes of formal education. Both in its difficulties and in its opportunities, it has more than merely a temporal precedence as compared with other branches of the teaching service. The kindergarten-primary teacher is something more than a teacher in the usual sense of the term. To a far greater extent than her colleagues in the intermediate grades, the junior high school, and the senior high school, she must assume responsibility for the personal and physical care of her pupils, and when these number as many as forty or fifty, this responsibility in itself is likely to be a most serious burden.

Interest in details. — Beyond this is the necessity for initiating a veritable host of habits, — moral and social habits as well as those that will form the basis of later attainments in the work of the school. This means an unremitting attention to a wide range of details, and the teacher who has naturally or is able to create not merely an interest but what one might almost call a passion for this detailed work of habit-building will find here a most fascinating field of work.

Interest in the individual. — A marked characteristic of expert teachers in this field is the keen knowledge of individual pupils that they seem to acquire very

quickly after taking charge of a new class. Often, within a week's time such teachers are able to give one a clear-cut description of the outstanding characteristics of every pupil. There is little doubt that the skill and insight necessary to this achievement grow with experience, but it is also clear that a deep and abiding interest in the individual child plays an important part in the development of such skill and insight.

Intelligent patience. — Another striking characteristic of successful teachers of little children is their patience, — we qualify the term by adding the adjective "intelligent," for a dull, routine, plodding patience sometimes masquerades in the cloak of this prime virtue. To guide learning in its first slow and halting steps is very far from an easy task for an alert adult mind, — and the primary teacher must have an alert mind, and this mind must be disciplined to patience. This again is a phase of the fine art of teaching that must be grown into, but those who are choosing a special field of service will do well to understand pretty thoroughly what this important qualification demands. It *is* difficult and exacting work — but it is doubtful whether any work in the entire range of human activities can surpass it in fundamental significance.

A clear head and an even temper. — These qualities are important assets for any teacher to possess, but for the teacher of little children they are indispensable. A teacher who cannot "keep her head" when dealing with a large number of children who have had as yet no experience in working together in groups, or a teacher who is likely to become flustered and irritable under these

conditions, cannot well succeed in this work. Furthermore, children in this stage of their development respond very quickly to the emotional characteristics of parents and teachers. A quiet, calm, and unruffled demeanor, and a hopeful, happy disposition are fortunately just as contagious as are their opposites; and the first of these, at least, can be cultivated with a goodly measure of success.

The emphasis of personal qualifications does not mean that intellectual qualifications are unimportant. — Because personal qualifications are so important in the kindergarten-primary field many people have inferred that the intellectual qualifications resulting from a keen intelligence richly informed through wide study are much less significant here than in other departments of the teaching service. This conclusion is far from justified. Many women of rare intellectual gifts and of broad training find the work of this field fascinating in the last degree, and it is not too much to say that the best kindergarten-primary teachers represent this type. The very complexity of the problems involved demands intelligence just as clearly as the relative helplessness and dependence of the pupils demand sympathy; and not only is the technique of teaching in this field more intricate and difficult of mastery than in any other, but the materials of teaching, as we have already seen,[1] are far from narrow in range or limited in scope.

The intermediate-grade service. — The "middle grades" of the elementary school cover what we have termed the "juvenile years" of child life. Relatively

[1] Chapters III and IV.

less attention has been given either to the characteristics of children during these years or to the educational problems involved than to the study of early childhood on the one hand and adolescence on the other hand. One reason for this neglect may lie in the fact that, to most adults, the child between the ages of eight and twelve is less interesting — perhaps less attractive — than are the younger and older children. Another reason for the neglect may be traced to the general belief that the educational problems of this period are less intricate and difficult than are those of the preceding and following periods. Whatever the reason may be, however, there can be no doubt that these years have been seriously neglected both in educational theory and in school practice.

There are good grounds for maintaining that this neglect is unjustified and that the intermediate grades, far from constituting the least important and the least difficult field of the teaching service, should claim a status second only to that of the primary grades, and in some respects a coördinate rank even with these. It is in the intermediate grades that the largest opportunities for an effective mass education lie. Only a bare majority of the pupils who enter the first grade pass beyond the sixth grade, and while this proportion will undoubtedly be increased in the future, there is every evidence that the four middle grades must bear the chief burden of equipping each generation with those elements of the social heritage that will be the common possession of all.

Nor are the juvenile years devoid of an intrinsic interest. While this may not be at the outset so appealing

to the adult as is the interest that one so readily takes in little children or in adolescents, it is perhaps even more fascinating to those who make an intensive and intimate study of the juvenile child. It is during these years that children live a life that is more distinctly their own than at any other time. The more thoroughgoing dependence upon others that characterizes infancy and early childhood has passed. In a certain measure the child now stands alone, and he rejoices in his independence. Miss Norsworthy and Miss Whitley, in their *Psychology of Childhood*,[1] characterize children in the latter part of this period as follows: —

> "Socially, children of eleven are moving in a world made up mostly of their own kind, vaguely peopled with adolescents and younger children, occasionally touched by the orbits of adults. True, grown-ups are borne with in such necessary spheres as industrial and school life, are tolerated as providers of food, money, and other things; but on the whole they are regarded as amazingly far from the interests, occupations, plans, and motives of the boy or girl of eleven. Many adult actions and points of view are incomprehensible, at best foolish, at worst unjust, and generally most uncomfortably non-predictable. At no [other] time may there be such complete mutual impatience or even misunderstanding, such falling foul of each other's inclinations and guiding principles."

A similar reference to the outstanding characteristic of boys and girls in this period of their development has been made by G. Stanley Hall: [2]

[1] Naomi Norsworthy and Mary T. Whitley: *The Psychology of Childhood*, p. 292. Macmillan, 1918. Miss Norsworthy (1877–1916) was one of the most remarkable teachers that America has produced. After several years' experience in the public schools of New Jersey, she became a teacher of psychology in Teachers College, Columbia University, where she served from 1901 until her death in 1916.

[2] Granville Stanley Hall (1848–1924) was a dominant figure in American education for nearly fifty years. In 1888, he became the first president of Clark University, Worcester, Massachusetts, and for more than a decade

"The world we live in is not theirs. We are 'Olympians' and can enforce our will because we are stronger. We must be tolerated and respected . . . ; but the interest of children at this age is almost exclusively in each other, and in each other's ways, not in adults. [The latter] breaks out suddenly, but just later."

It is because of this detachment of the juvenile child from the adult world that he is so difficult to understand. The teacher who can the most accurately reconstruct the attitudes and feelings of his or her own childhood days is probably the teacher who can get on best with the boys and girls of the intermediate grades. Some of the characteristics of such a teacher may be briefly referred to.

The intermediate-grade teacher must be objectively minded. — This is, indeed, an awkward expression but it has reference to a very important trait. The teacher who would deal successfully with the problems of this period must not expect a direct and immediate return in the way of gratitude and regard upon the part of the pupils. As Dr. Hall says, "There is little sentiment and much selfishness bound up in the hearts of children at this age," and Miss Norsworthy and Miss Whitley,[1] in speaking of eleven-year-old children, call attention to some of the difficulties that the teacher must meet:

". . . though the sense of ownership is well developed so far as their own *versus* their friends' belongings are concerned, the sense

this institution was the leading center (really the only center) for the advanced study of educational problems. Dr. Hall was the founder of the Child Study movement, a very important development in education and a forerunner of the present-day interest in educational science. His most important work is his two-volume treatise, *Adolescence*, published in 1904 (Appleton). The quotation in the text is from a paper, "The Ideal School Based on Child Study," published in the *Proceedings of the National Education Association*, 1901, pp. 474 ff.

[1] *Psychology of Childhood*, p. 292.

> of honor is not yet sufficiently generalized to make them keep from meddling with the property of older members of the family, adults in general, or the public at large. Their impulsiveness, imperfect reasoning abilities, wide-awake energy, eagerness to be experimenting, investigating, making things happen, lead them into all sorts of situations which to the unsympathetic adult smack of sheer perversity or willful mischief. Since they are not yet advanced enough to generalize principles of conduct, orders or directions have to be specific; these cannot usually be sufficiently numerous to cover all the possibilities that will suggest themselves to a healthy, active child. Hence the wail from the injured adult, 'Who would suppose that they would ever think of that?' and from the children-culprits, 'We weren't ever told not to do that'; or, 'How was I to know they'd object to that? Whatever a feller does seems wrong.'"

To take personally or too seriously all of the expressions of this vibrant life of the juvenile child is likely to interfere very sadly with the success of the teacher. On the other hand, to surrender before them, to relax all control, and to let the spontaneous impulses work themselves out unhindered no matter how disastrous the results, is only to seize the other horn of the dilemma. There is a nice balance to be maintained here — a balance that can be maintained only when the teacher is in full command of himself or of herself. Easily hurt feelings and an easily ruffled temper are scarcely conducive to such self-command.

A good-natured and sympathetic firmness especially important at this time. — What has just been said suggests that the teacher who is successfully to solve the problems of the juvenile years must be both sympathetic and firm. In dealing with younger children and with adolescents the gentler qualities of personality may per-

haps do something to compensate for a deficiency in firmness and strength of will upon the part of the teacher. But sentiment or any form of sentimentality is likely here to have a quite negative effect. Good-nature and good temper there must be always; but there must also be on the part of the teacher a real control. If it is true that he must have a large measure of self-command it is primarily because he must always be in complete command of the situation.

Varied interests and abilities are distinct assets to the intermediate-grade teacher. — Dr. Hall sums up the ideal qualifications of the teacher of boys and girls during the juvenile period in the following words:

> "Lastly, the ideal teacher at this age will be the captain of the child's soul; will be able to do some things with his or her body that the child cannot; will be able to answer most of the questions suggested by the field, the forest, the beach, the street, and their denizens; will suggest plays and umpire games; will perhaps know a little of coaching, but will be a stern disciplinarian, genial withal, but rigorous and relentless in his exactions, and intolerant of all scamped work; will love occasional excursions and expeditions; will perhaps sing, play, and draw a little; will be able to do something expertly well; and, as perhaps the culminating quality, will have a repertory of the greatest stories the human race has ever told or heard. . . .
>
> ". . . Finally, the teacher should have good manners, a uniform disposition, much joy of life, and sympathy with just this age. Some persons are made to love children in this stage most of all. . . ."

This is truly a large order, and perhaps all of its details should not be taken too literally. But it sets forth an ideal toward which one who has that final characteristic, "sympathy with just this age," may well direct

his or her ambitions, and with results that Miss Norsworthy and Miss Whitley suggest, —

> "The adult who can appreciate the real motives at work in children, who does enter into the sport, who is serious and respectful at the right time, who is inventive enough to 'play up,' may cross a bridge over the gulf into charmed land of boy and girl trust, love, even adoration."

The upper-grade and junior-high-school service. — The typical child in the upper grades is in the initial stages of the period of adolescence. It should be remembered, however, that we are speaking only of the typical or normal child. In many children the changes that mark the beginning of pubescence do not come before fourteen or fifteen; in others, the changes come at eleven, ten, or even nine. In general northern races mature more slowly than southern races, and boys usually mature a year or two later than girls of the same race. Every teacher who works in the upper grades or the junior high school should remember, then, that some of his pupils are likely to be pre-pubescent, and to have many of the juvenile characteristics that we described in the preceding section. It should also be emphasized that, while the physical changes coming at the outset of adolescence are relatively abrupt, the intellectual and emotional changes are probably more gradual.[1]

From the point of view of the questions at issue in the present chapter, the most significant characteristic

[1] Among the students of adolescence and its problems may be mentioned G. Stanley Hall (see footnote, p. 348); M. Vincent O'Shea (born 1866), since 1897 a professor in the University of Wisconsin; Edwin A. Kirkpatrick (born 1852), since 1898 director of the department of child study in the State Normal School at Fitchburg, Massachusetts; Edwin D. Starbuck (born 1866), a professor formerly at Stanford University and since 1906 at the State University of Iowa.

of adolescence is the transformation that takes place in his attitude toward life in general, and especially toward the adult world which he is just entering. A compact summary of these important changes has been prepared by Dr. B. C. Gruenberg [1] for the Federation for Child Study, an organization of teachers and parents associated with the Ethical Culture School of New York City:

"The child's general satisfaction with himself and his surroundings gives way during adolescence under the pressure of a host of problems, difficulties, and maladjustments. From indifference to matters not immediately related to pleasures and pains, he plunges into intense curiosity and self-consciousness, and into real though spasmodic concern with the standards of adults. Curiosity may show itself in a great variety of normal activities; but it is also subject to ready perversion under unwholesome surroundings. . . .

"Satisfaction with routine and drill is replaced by restlessness, leading often to truancy and erratic action; by doubts giving rise to religious disturbances, and by inability to concentrate for long upon any pursuit or undertaking.

". . . The interest in other people becomes focused in friendship, and in loyalties to companions of his own choosing. In the same way the more or less habitual obedience and compliance with rules is replaced by a spirit of criticism and revolt against authority, which usually means a selection of his own leaders and his own ideals of conduct."

Miss Norsworthy and Miss Whitley also emphasize [2] clearly the profound nature of this transformation:

"Rapid physiological changes take place, and these, together with the probable changes in home life and the sharing of wider community activities, make the period peculiarly difficult to live through with poise. Though there is already a large system of

[1] B. C. Gruenberg (editor): *Outlines of Child Study*, pp. 167 f. Macmillan, 1922.

[2] *Psychology of Childhood*, p. 252.

> organized personal habits, yet strong, intense new impulses from within, fresh customs and standards without, the new feeling of individuality and the immaturity of the will combine to provide ordeals that test the adolescent in all sorts of ways. . . . The whole being is likely to be in a ferment from twelve to sixteen, though the temperamental differences are an important factor in determining the length and intensity of the emotional activities of the period. The social nature is being born, as it were, at a psychic crisis, so that at no time is there apt to be greater disparity between insight and power to act, between judgment and moral control; at no time is the moral equilibrium more easily upset."

The development of the junior-high-school movement. — Educationally the years of life normally covered by the seventh, eighth, and ninth grades are now recognized as a period so significant as to demand a "unit organization" for this division of the school. This recognition has come chiefly during the past twenty years, and may be traced in part to the widespread interest aroused in the phenomena of adolescence by the work of Dr. G. Stanley Hall and his associates, and especially by the publication of Hall's *Adolescence* in 1904. For more than a decade before this, however, the advisability of recognizing the seventh and eighth school years as integral parts of the secondary school rather than of the elementary school had been seriously proposed on the ground that many of the high-school studies, especially the foreign languages, are best begun at an earlier age than fourteen. The question was explicitly raised in the famous report of the "Committee of Ten," published in 1893. This committee had been appointed by the National Education Association to investigate the high-school studies and make recommendations for their

improvement. One of the great figures in American education was chairman of the committee, — Dr. C. W. Eliot,[1] then President of Harvard University.

With the awakened interest in adolescence these proposals to give more time to the high-school studies took another form. It now became a problem of so reorganizing the school system that the school years constituting the adolescent period should form a separate unit.[2] As the discussion proceeded, it seemed desirable to recognize the seventh, eighth, and ninth grades as constituting the first stage of secondary education under the designation "junior high school," leaving the tenth, eleventh, and twelfth grades as the "senior high school." While this "six-three-three" plan, as it is sometimes called, has not yet entirely superseded the older "eight-four" [3] plan, the movement during the past ten years has been steadily in this direction.

[1] Charles William Eliot was born in 1834. He became president of Harvard University in 1869 after several years' service as a teacher of chemistry. He remained in the office of president for forty years, instituting during that time some of the most significant forward movements in higher education, the most notable of which was the plan of having the students, under certain restrictions, choose or "elect" their own studies instead of following a closely prescribed curriculum. He was also greatly interested in elementary and secondary education, and was especially active in advocating a type of education that would lay greater emphasis upon the direct study of nature and less emphasis upon the study of records. Throughout the period of his active service and since his "retirement" in 1909, he has shown an unflagging interest in the great questions of the day and untiring zeal in the study of public problems. On the occasion of his ninety-first birthday in 1924, he was hailed throughout the country as the most distinguished living American.

[2] This phase of the problem was brought to the front in 1905 by W. C. Ruediger in an article entitled, "Has the Dividing Line between Elementary and Secondary Education Been Drawn at the Proper Point?" in *The Elementary School Teacher*, vol. v, 1905, pp. 482 ff. Dr. Ruediger (born 1874) is a well-known student of educational theory, and the author of an important book, *The Principles of Education*, Houghton Mifflin, 1910. He has been for many years Dean of Teachers College, George Washington University. One of the pioneers in the reorganization was A. S. Whitney (born 1857), who was for several years superintendent of schools in Saginaw, Michigan, and who is now Dean of the School of Education, University of Michigan.

[3] In many of the southern states, the older plan was on the "seven-four" basis, and the newer plan is either a "six-two-three" or a "six-five" division.

The distinctive functions of the junior high school. — While the desire of the Committee of Ten to have the high-school subjects begun earlier has found some measure of satisfaction in the development of the junior high school, the movement has actually been guided by a more fundamental need. Psychologically, as we have seen, the early pubescent period is marked by a widening of interests, a veritable expansion of the mental horizon. Educationally, it may profitably be recognized as an "exploratory" period. The school studies, it is believed, should stimulate and satisfy these new and wider interests.[1] While there may well be some measure of differentiation in the school program, — some room for choice of studies and activities, — the proposal sharply to classify the pupils according to their future occupations and to provide specialized training for the various groups has not gained much headway. It is rather felt that there is still need for courses that are common to all, especially in those subjects that will lay the important bases of a "common culture" (see Chapter IV). The distinctive functions of the junior high school are, then, (1) to provide a broad and rich foundation for the common life that all must lead, and (2) to discover special interests and capacities that later (and to some slight extent during this period) may be more fully developed through specialized forms of education.[2] The ideals that have inspired the junior-high-school movement are to be realized in part

[1] See H. C. Hines: *Junior High School Curricula*, an accompanying volume in the American Teachers College Series.

[2] See the discussion of "vocational guidance" and "vocational enlightenment" in Chapter V.

through an enlarged, enriched, and otherwise modified curriculum, but chiefly through a new vision and a keener insight upon the part of the teacher, — a vision and an insight that will depend primarily upon a clear understanding of the potent forces which the onset of adolescence sets free, and an appreciation of the relation of these forces both to the development of the individual and to the welfare and progress of society.[1]

In the light of these possibilities and problems, it is small wonder that the early adolescent period has proved so fascinating a field of study, or that the school years represented by this period form so attractive a field of the teaching service. It is small wonder, too, that this field of service demands on the part of teachers qualifications that differ in important ways from those demanded in the preceding period. It is difficult to formulate these requirements in a concrete and helpful fashion, but there are some suggestions that follow almost as corollaries from the characteristics of the period itself.

Again the need for an abiding interest and faith in the individual. — It is needless to say that the individual pupil must always be the object of chief concern to the

[1] Among the students of the junior-high-school problem, the following deserve especial mention.

C. H. Judd (see footnote, p. 217).

Charles Hughes Johnston (1877–1917) was for a time Director of the School of Education of the University of Kansas, and later a professor in the University of Illinois. Through his two books, *High-School Education* (1912) and *The Modern High School* (1914), and through the journal *Educational Administration and Supervision* of which he was editor, he exerted a powerful influence on the junior-high-school movement at the time when it was first seriously projected.

Thomas H. Briggs (born 1877) has been associated with Teachers College, Columbia University, since 1912. He was an active member of the Commission on the Reorganization of Secondary Schools of the National Education Association, which did much to set standards for the development of the junior-high-school movement. He is the author of *The Junior High School*, Houghton Mifflin, 1920.

teacher, and we have already emphasized the intimate, personal knowledge that good primary teachers have concerning each of their charges. During the early adolescent years, the need for a deep personal interest and sympathy is no less real, but it takes a somewhat different form. It is the spiritual and the mental needs especially that must be ministered to. It is the adjustment to social forces and pressures now just beginning to be felt that must be directed. The newly developed self-consciousness of the individual, which expresses itself so often in awkward, incoördinated movements, is paralleled on the mental side, now by bashfulness and reticence, and again by misdirected explosions of confused thinking and uncontrolled emotion. At no period are real encouragement and sincere appreciation so fruitful of good results; at no period are insensitiveness and bluntness on the part of adults so poignantly felt and probably at no period is the lack of sympathy and understanding likely to be so disastrous in its after-effects.

The qualities of social leadership especially significant at this time. — The awakening of the social impulses now opens large possibilities for replacing competition with coöperation (pp. 172 ff.) and it is here that whatever capacities the teacher may have for leadership will find room for full play. Deftly to guide pupils in the formulation of collective problems and in the coöperative solution of such problems requires skill and insight which will accumulate and ripen only through the discipline of experience; but even to make a fair start in the right direction one must probably have at least a

certain *quantum* of innate capacity for leadership, an unquestioned lack of which should make one think twice before undertaking service in this field.

Breadth of outlook and of interests. — The characteristics of early adolescence clearly indicate that the teacher who is best able to "serve youth" at this time cannot be a narrow specialist. Knowledge there must be of the subjects that one essays to teach, but while there is a grave danger always in minimizing the importance of an intensive and thoroughgoing mastery of a narrow field of scholarship, it would be equally unfortunate not to recognize that the junior-high-school teacher needs more than this. One of the arguments advanced against the junior-high-school movement in its earlier stages was that the transfer of the seventh and eighth grades to the high school would tend to overemphasize in these grades the "teaching of subjects" at the expense of the "teaching of children." At basis, of course, there should be no conflict between these two functions, and it is unfortunate to set one over against the other, as if "teaching children" could proceed independently of "teaching subjects." On the other hand, it is sometimes true that the teacher's primary interest is so exclusively in his subject that he completely loses sight of the fundamental problem of teaching, — which is to build his subject into the experience of the learner. In this sense, one may be too completely immersed in his subject to be a good teacher.

Beyond this, too, is the need of a catholicity of interests that will enable the teacher to see his subject in the large and in its relation to other subjects and to

human life and human problems. A most effective approach to any subject or topic, especially during the junior-high-school period, is through its applications to problems which appeal to the learner as significant. As we have seen,[1] it is sometimes possible to organize around such problems much of the knowledge and skill that is to be mastered, and it is clear that the teacher who is to utilize effectively this "project method" of organizing educational materials will need an equipment that extends far beyond the limits of his own special field.

Coöperation with fellow-teachers. — What has just been said suggests that the teachers of the junior high school, who are in some respects specialists in their own subjects, must be able to work together each with a fairly complete understanding of what the others are doing. In the primary and intermediate grades, the pupils in most cases will have been in charge of "room teachers," each of whom is responsible for practically all of the instruction that the group receives. A teacher who works under these conditions can readily adjust the various subjects to one another, and keep the program well balanced. When the pupils pass to the junior high school and are suddenly thrown into a "departmentalized" system, there is serious danger either that this balance will be lost or that the pupils in their attempts to keep up with the requirements of each subject-matter teacher will be confused, worried, and perhaps overworked. The junior-high-school teachers must counteract this danger by a kind of "team-work" that is needed

[1] Recall the discussion of the "project method" in Chapter X.

badly enough in all departmentalized schools, but especially here.

Willingness to share in the responsibility for extra-curricular activities. — The importance of the early adolescent years as a period of social awakening has led to a recognition in the school of the educational values inherent in clubs, societies, and pupil-organizations of various types. To direct and supervise these "extra-curricular" activities as they are called makes large demands upon the time, energy, and resourcefulness of the junior-high-school teacher, as well as upon the capacities for leadership to which we have already referred. The teacher who looks toward this field of service, then, should remember that the duties involved are likely to extend beyond the classroom, beyond the regular hours of the school day, and far beyond the limits of the subjects that he or she will teach.

The senior-high-school service.[1] — The senior high school representing the middle and later adolescent years demands personal qualifications upon the part of the teacher that are not essentially different from those of the junior high school. The principal difference lies in the degree of specialization which the differentiated curricula of the senior high school permit. There is still, however, the problem of maintaining a proper balance among the several subjects that each pupil pursues,

[1] In addition to the persons mentioned in connection with the development of junior high schools, the following have won distinction as students of the general problems of secondary education.

Stephen S. Colvin (see footnote p. 258.)

Alexander J. Inglis (1879–1924) was a member of the staff of Harvard University from 1914 to the time of his death. He is the author of *The Principles of Secondary Education*, Houghton Mifflin, 1918, and was a member of the Commission on the Reorganization of Secondary Education.

and the consequent need of coöperation on the part of the various teachers concerned. There is still the need, too, of directing toward worthy educational ends the social impulses that express themselves in clubs and organizations.

The qualities of leadership particularly significant. — The qualities that make the teacher a "natural leader" are perhaps more important in the senior high school than in any other field of the teaching service. For a great many if not for most adolescents, the years between fifteen and nineteen are by far the most critical from the point of view of moral development. It is during this period that the experience of religious conversion (see p. 246) most frequently occurs; and it is during these years, too, that the initial steps are usually taken which lead to lives of vice and crime. The period of middle adolescence has always been regarded as peculiarly significant to religion, even in its most primitive forms; and more and more clearly, with the advance of civilization, society has recognized its responsibility to safeguard youth during these formative and impressionable years. The rapid growth of the high school is multiplying each year both its possibilities of rendering a great service in the solution of the problems of moral education [1] and its responsibilities for undertaking the task in a fundamental way. To this end no other factor can surpass in significance the qualities for leadership which the high-school teachers as a group represent.

The rural-school service. — The open-country schools, whether "one-teacher" or "consolidated" (see pp. 272

[1] See other references to the problem of moral education, pp. 155 ff.

f.), make certain demands upon the personal qualifications of the teacher that are not made in anything approaching the same degree by the town and city schools, and for two reasons: (1) because the school in the open country can be and frequently is much closer to the people and much more thoroughly a center of community life than is the urban school; and (2) because the open-country environment represents unique educational opportunities which the teacher can turn to good account if he has the right qualifications, while at the same time this environment represents some very definite educational handicaps which only the right kind of teacher can overcome.

The community functions of the rural school. — The wide range of opportunities for constructive work which the rural-school service involves have been summarized by Miss Mabel Carney [1] in her discussion of the community functions of the rural school, which she conceives to be as follows:

> "1. To educate those for whom it was established, that is, children and youth of legal school age.
>
> "This is the chief community service of the school as well as its fundamental educational function. The best service of the school to the community, in other words, must always be found in the proper discharge of its educational function. . . .

[1] Mabel Carney is one of the recognized authorities in the field of rural education. After serving for four years as a rural-school teacher, she became successively a critic teacher in the normal schools of Illinois and Washington, supervisor of high-school training classes for rural-school teachers in Minnesota, and head of the department of rural education in Teachers College, Columbia University. She is the author of *Country Life and the Country School*, Row, Peterson, 1912. The material quoted is from her report on community relations of rural schools made in connection with the New York Rural School Survey (*Rural-School Survey of New York State*, 1923, vol. iv, pp. 211 ff.).

"2. To . . . make provision for extra-curricular or outside activities for children, and thus indirectly effect the improvement of home and community life.

"These socialized activities may be provided either directly by the school itself or indirectly through its coöperation with other related agencies, as Boys' and Girls' Clubs, Junior Red Cross, Boy and Girl Scouts, and Camp Fire Girls.

"3. [To encourage in the community] an adequate appreciation and support of education.

"This may be done either through the maintenance of separate organizations for adults giving primary attention to school affairs, as parent-teacher associations and school improvement leagues; or through the close coöperation of other organizations, as granges, farm and home bureaus, or general community clubs, organized primarily for non-school purposes but willing to devote special attention to the study and advancement of educational needs. . . .

"4. To coöperate with other agencies in such of their activities as are educative to children of school age.

"Practically all country-life organizations for adults make some provision for the education of the young in the fields of their major interest, and as long as these plans are in harmony with the underlying principles of education they should be cordially assisted and supported by the school.

"5. To stimulate the establishment or regeneration of other community activities or agencies . . . designed to supplement the school and minister directly to the welfare of children.

"Included here especially should be such interests as health, recreation, and cultural advantages, including travel, library privileges, and opportunities to become acquainted with the world's best music and art.

"6. To furnish information for putting adults of the community in touch with the public and private agencies of county, state, and national scope which will contribute to their cultural or vocational welfare.

"By this it is not meant that the school should supplant other agencies in the rural community, but only that rural teachers . . .

should be able to tell country people where to get needed help and service. . . .

"7. To . . . encourage the use of the school plant, when the people so choose, as a general community center or common meeting place for other agencies and activities of the community. . . .

"8. When the essential needs of the children have been properly met the school may extend its community function to include the post-school education of adults, both cultural and vocational.

"But this obligation should not be assumed until children and youth of school age have been adequately provided for, and it is not ordinarily possible to the rural elementary school as now organized and handicapped. . . ."

Miss Carney's clear statement of the precedence that should be accorded to the primary function of the rural school — the education of the *children* of the community — is timely and salutary. This is the outstanding obligation of elementary and high schools whether they serve rural communities or urban communities. The opportunities for a wider service are most significant, however, for if these opportunities are wisely utilized, the primary function of the school will be all the better discharged.

The unique educational opportunities of the rural environment and its educational handicaps. — From the teacher's point of view, the problems of rural education differ from the problems of urban education, not because of essential differences in aim, but because of real and fundamental differences in environment. The work of the school is profoundly affected by its environment, for this determines in large measure the first-hand experiences of the pupils, and upon these experiences education as we have seen (Chapter II) must always build. The

skillful teacher also uses the out-of-school experiences of the pupils to give point, meaning, and vitality to the school instruction. The rural environment provides a rich variety of experiences that the teacher, if he knows this environment intimately and has acquired the necessary skill and insight, can readily turn to educational account.

A certain one-teacher rural school, for example, operates a poultry yard. It operates also a productive school garden. Pure-bred poultry is its specialty in the one case; pure-bred seed-corn in the other. Its profits come from the selling of settings of eggs and from the selling of corn for seeding. With these profits the school plant is improved. A large community-room has been added to the school building. An attractive fireplace gives a homelike atmosphere not only to the community-room but to the classroom into which it opens. Comfortable chairs, a small library, and a library table contribute to this homelike atmosphere. In another part of the building is a kitchen where the children prepare their warm lunches.

Now it is clear enough that a school might realize the aims of rural education without operating a poultry yard or a seed garden; it is equally clear that it might possess these and other adjuncts without being a good school; but, other things equal, it is likely to be a better school than it would be otherwise if it makes an intelligent use of the environment that surrounds it and of the dominant interests of the pupils in the life of this environment. In this particular school, the poultry yard and the garden are sources of educational materials and educational methods. They are centers from which radiate studies in arithmetic, in geography, in elementary science, and in language. In part, they are ends in themselves, but only in part; of far greater importance is their service to larger ends. They are starting-points from which the pupils are led into a wider world.

There has been a lively discussion among the students of rural education as to the measure in which the rural

school should aim to "keep the children on the farm." [1] A reasonable position to take provisionally with regard to this problem is to assume that the right kind of rural education can and should encourage in the pupils an understanding of their environment, an appreciation of its advantages, and a wholesome respect for the occupation of farming. On the other hand, the frequent charge that rural education fails to make country children "content" with farm-life carries with it an unfortunate and a most unworthy implication, — namely, that the rural school should itself be content with a narrow curriculum based on the principle of keeping country people in happy ignorance of everything except the details of their daily work. To direct any form of education toward the specific purpose of keeping people "contented with their lot" is obviously inconsistent with the plainest principles of democratic justice. One may go even farther and say that the rural school should make a distinct effort to acquaint its pupils with occupations other than agriculture, with their advantages and their handicaps, and with the kind of life that urban people live. An honest setting forth of the relative advantages and disadvantages of urban and rural life

[1] Among the leaders in rural education, the view that the rural school has a distinctly vocational function in preparing pupils for farming and other open-country occupations has been stoutly maintained by Dr. Harold W. Foght (born 1869). Dr. Foght has made extensive studies of rural education in the Scandinavian countries, especially Denmark, where the possibilities of a special education for the farming classes have been developed in a remarkable degree. He is now President of the State Teachers College at Aberdeen, South Dakota.

Ernest Burnham, who is head of the department of rural education in the Western State Normal School, Kalamazoo, Michigan, Dr. O. G. Brim, a professor of education in Ohio State University, Miss Mabel Carney (see footnote, p. 363), and others have held that the function of rural education is not essentially different from that of urban education, but that the problems of the two fields are in many ways sharply differentiated because of the contrasts between rural and urban life.

would be vastly better than the distorted ideas that country children are otherwise likely to develop; and even if, after a frank discussion, some children conclude to cast their lot with the city, the catastrophe will not be comparable with the crime that the school would commit if it deliberately withheld the facts. The city-folk may need food, and may protest against the "depopulation" of the open country; but this scarcely justifies one in being a party to the exploitation of the country-folk, — and to limit the country child to a narrow curriculum on the ground that he must be kept on the farm is about the last word in the deliberate exploitation of one class for the benefit of another.[1]

On the other hand, for the rural school to be blind to the rich educative materials that lie all about it is equally inexcusable. While it should not aim to "keep children on the farm" through a deliberately narrowed curriculum, it should clearly not go to the other extreme and imitate blindly the procedures of urban education. Certainly no one could quarrel with a policy of rural education that aimed to reveal and interpret to the country child the wealth of interesting things that surround him. We have already emphasized (pp. 119 ff.) the need of

[1] The cry against the city-ward movement of the population has lost to-day much of the force that it had a few years ago. It is now clear that this movement has been determined very largely by economic factors. There are relatively fewer farmers in the United States than there were a generation ago, and yet much more food is being produced. During the past few years, indeed, there has been so serious an overproduction that hundreds of thousands of farmers have been unable to dispose of their crops at a profit. They have literally been driven to the town and city, not because of any defects in their early education which failed to adjust them to country life, but because the supply of farmers exceeded the demand. This shifting of the economic balance will doubtless go on for some time to come, and thousands of boys and girls now living in the open country and attending rural schools will become city-dwellers. It would be shortsighted, indeed, for rural education not to recognize this clear probability.

a conception of culture that will recognize the deep and fundamental meanings that inhere in the common things of life. Rural education offers by far the largest opportunities of dealing in a broad and liberalizing way with these common things. The simplest implements of husbandry, — the axe, the spade, the hoe, the sickle, and the plow, — have had a long and honorable history. What iron has meant to the race can be far more clearly illustrated here than in the study of modern industry and transportation because of the very simplicity of the tools, and the readiness with which their advantage over stone and wooden implements can be shown. Practically every cultivated plant, too, owes to human ingenuity its adaptation to human needs. These are but meager samples of the almost infinite possibilities that well-trained and enthusiastic rural-school teachers are beginning to explore and to turn to educational advantage.

The educational assets of the rural environment, however, are counterbalanced in some measure by liabilities and disadvantages. The frequent and intimate contacts with nature and the direct, personal experiences of the country child with the basic processes of meeting human needs are offset in part by the relative isolation of the life and the narrow range of human contacts. These gaps and deficiencies in the life of the country child the rural school must try to bridge and meet. As Dr. Brim has said, the school must "teach the child those essential things he does not learn outside of school"; and the need of the country child for those subjects that were discussed in Chapter IV — the "liberal" studies — is particularly significant in this connection. Because

his contacts with people are likely to be relatively few, there is all the more reason why he should be introduced to a group of people with whom he may continue a growing friendship throughout his life, — people who, when they become tiresome, can be placed on the shelf without hurting anyone's feelings. These really great people of literature and history may compensate in no small measure for the social isolation of the open country. And if country life is peculiarly conducive to provincialism, there is an antidote in geography, — not, perhaps, in geography as it is too often taught, but in real "human" geography through the study of which a competent teacher may take a group of boys and girls to every part of the globe, giving them in almost every lesson the feeling that they have actually "been there," that they know how the region looks and how the people live and what they do that we might do; — introducing them too, perhaps, to that fascinating literature of travel and exploration and government through the independent study of which the most isolated country-dweller may become in a very real sense a "citizen of the world."

The type of teacher that the rural service needs. — In Chapter X, it was pointed out that the typical rural-school teacher to-day is immature, relatively untrained, and a transient in the service. There is a distinct need in the rural schools for a teacher of another sort, and we believe that competent young people who wish to enter a field where good work will be of the very largest value, and who are willing to pay the price of a careful training for its important responsibilities, will be warranted in

assuming that this need will be recognized, and that their services will be in demand. A few words will describe the type of teacher that is needed: a mature man or woman; well-grounded in the fundamentals of elementary and secondary education, with the additional equipment provided by two, three, or better four years of a broadly conceived specialized education pointed directly toward this work; fired with a love of country life, familiar with its problems, competent to the difficult task of making the rich environment that lies all about the school yield up its valuable lessons; competent as well to open to the country child the world that lies beyond his horizon; living in the community as a part of it, perhaps as its very soul and center; proud of his profession but humble with a sense of its responsibilities; not ambitious to attain "promotion" in the current meaning of that term, but finely ambitious to grow in a work in which the possibilities of growth have no limit.

Special types of teaching. — In addition to the large fields of service dealt with in the preceding sections of this chapter, there are smaller fields, all of which are significant, and for some of which specialized curricula are provided in the professional schools. We can do little more in the present volume, however, than to list some of the more important of these fields. This restricted treatment is justified by the fact that these more highly specialized teachers deal as a rule with pupil-groups and social groups that do not differ essentially from those that we have already discussed. The essential differences, then, are in the education and technical equipment of the teachers rather than in their personal

qualifications. Some of these fields, too, recruit their teachers from those branches of the service that we have already discussed; hence they are not ordinarily fields which one may enter immediately after graduation from the professional school.

Teachers of atypical children. — This field is represented by the schools and classes for the blind and deaf, for the feeble-minded, for exceptionally gifted children, and for moral delinquents. For each of these cases except the last, a highly specialized type of training is demanded, — and it should be, of course, for all of them. In each case, too, experience in teaching normal children is almost always a prerequisite to an appointment.

Teachers of vocational subjects under the terms of the Smith-Hughes Act. — The Smith-Hughes Act, passed by Congress in 1917, provides for Federal participation with the states in the support of vocational education "of less than college grade" (see pp. 302 f.). In this connection, money grants are made for training teachers of agriculture, the household arts, and the artisan trades, who will serve in the high schools that avail themselves of the state and Federal appropriations. In most of the states, this work in vocational teacher-training is assigned to the "land-grant" colleges, — that is, the colleges of agriculture and mechanic arts that have been developed as a result of the Morrill Land-Grant act of 1862. In a few of the states some of the work has been delegated to the normal schools and teachers colleges. The training courses are usually interwoven with the technical curricula in agriculture, household economics, and engineering, and for teachers of the artisan trades

actual experience in the trade itself is regarded as an essential prerequisite.

Teachers of "special subjects." — The successive introduction of music, drawing, manual training, and domestic science as parts of the elementary-school curriculum led to the development of a group of "special" teachers who took the place of the "regular" teacher when one or another of these subjects was to be taught. Where shops and laboratories were required, as in manual training and the household arts, the special teachers usually worked in "centers" to which groups of pupils from the neighboring elementary schools went for instruction; in the case of music and drawing, the special teacher passed from school to school and from room to room taking each class for the period. In many school systems, the duties of the special teacher became almost exclusively supervisory in character, — the regular classroom teacher giving the actual instruction, the special teacher "checking" the work, making suggestions for its improvement, and meeting the regular teachers at frequent intervals in group-conferences. As the "special" subjects increased in number, the complications and irritations involved in this system were multiplied. Special teachers and supervisors were appointed for nature study, for penmanship, for physical training and health education, for "visual education," and even for some of the "regular" subjects such as arithmetic, English, and the social sciences.

Teachers of special subjects under the "platoon plan." — In some of the larger cities, an effort has been made to solve the problem of the "special" subjects through a

rather complete reorganization of the elementary school. From the first grade on, the program is divided into three parts, — "work," "play," and "study," — and the pupils move by groups or "platoons" from the "home room" (where most of the "regular" school work is carried on under the "home-room" teacher) to the shops, gardens, or laboratories for industrial arts or nature study, each under a special teacher; thence to the gymnasium or the playground for directed play or other forms of health education under a special teacher; thence to the music room or the auditorium for singing under a special teacher; thence back to the home room for work on the "regular" subjects or for directed study under the supervision of the home-room teacher. In this way, each teacher, whether "regular" or "special," has his or her own allotment of work to do with the pupils, and the time for doing it is part of the stated program. The "platoon plan" requires a somewhat larger proportion of "special" teachers than the older system, and a somewhat longer school day, but it has obvious advantages in providing a balanced program of varied activities for the pupils, it makes it possible to teach the special subjects in such a way that a real value can be derived from them, and it enables the home-room teacher to concentrate on the "regular" subjects without constant interruption from a more or less continuous procession of special teachers and supervisors.[1]

[1] The organization of the school on the "work-play-study" basis which is the essence of the platoon system was first conceived and put into operation by William Wirt (born 1874), who has been since 1907 superintendent of the Gary, Indiana, schools. This plan and other innovations introduced by Mr. Wirt gave the Gary schools a wide reputation, especially during the decade, 1910–1920.

If this type of organization is generally adopted, much more of the teaching in the elementary school will be specialized than has been the case in the past. The policy in the school systems that so far have put the plan in operation, however, is to make successful work as a home-room teacher a prerequisite to appointment as a special teacher, the necessary special training for the work being secured either through in-service education or during a leave of absence.

The research service. — The rapid development of objective measures for testing mental ability and educational achievement (pp. 188 ff.) has led during the past ten or fifteen years to the opening of a new and important branch of service which may be called the research field. Practically every large city school system now has its staff of clinical psychologists and statisticians whose business it is to devise and adapt mental and educational tests, administer them or instruct teachers in this technique, assemble and interpret the results, and suggest improvements in school organization, curriculum materials, and methods of instruction based upon their findings. Similar bureaus of research have been established in connection with some of the state departments of education, and they are sometimes attached to teachers colleges and university schools of education. Taken together,[1] the bureaus of research constitute the most

[1] The research workers are united in a flourishing national organization, the Educational Research Association. Its official organ is the *Journal of Educational Research* (Bloomington, Illinois) founded and edited by Dr. B. R. Buckingham (born 1876), himself one of the pioneers in the measurement movement, and now Director of the Bureau of Educational Research at Ohio State University. Other important leaders in this field are S. A. Courtis (see footnote, p. 217); Mrs. Helen Bradford Woolley, for several years director of the Bureau for the Investigation of the Conditions of Working Children,

powerful single factor now working toward the improvement of education. The service requires a specialized and highly technical preparation which is now provided by the larger universities. Previous experience as a teacher is regarded as desirable, but it is not a *sine qua non* to appointment.

The administrative and supervisory services. — The administrative phases of public education have become increasingly difficult and important as school systems have become larger and more complicated. The "business" side of school organization and management can be looked after readily enough by the school board in a small district with a one-teacher school, or with at most three or four such schools. As the schools are multiplied and the teachers increase in number, the oversight of buildings, the purchasing of supplies, the selection and appointment of teachers, the evaluation of their work, the adjustment of misunderstandings between parents and teachers, and a host of similar duties become too heavy a burden for a small group of laymen to carry in addition to their regular business. With the growth of school systems, then, the school boards came to depend more and more upon an employed executive to do this work. Inasmuch as the school building was a convenient unit of administration, one of the teachers in the building was usually recognized as the "head master" or "principal teacher," and to him administrative responsibilities were delegated which he discharged as well as he could in the intervals of his teaching or after school

Cincinnati; Bird T. Baldwin (born 1875), since 1917 director of the Bureau of Child Welfare, State University of Iowa; and M. E. Haggerty (born 1875), now dean of the College of Education, University of Minnesota.

hours. City school systems had grown to a considerable size before the office of the school "superintendent" gradually evolved through relieving one of the principals of all teaching duties and delegating to him the oversight and administrative control of the several schools constituting the system. The relative recency of this development is evidenced by the fact that the first city-school superintendency was established in Buffalo less than a century ago (in 1837), or nearly two hundred years after the initial development of the public school in America.

As at present constituted, the administrative service comprises state superintendents of schools (usually elected by the people, but in many cases appointed by the governor or by a state board of education, in which case they are usually designated state "commissioners of education"); county superintendents (usually elected by the people, but sometimes appointed by state or county boards of education) whose duties are commonly limited to the oversight of rural and village schools; city superintendents (appointed by city boards of education) with their associate and assistant superintendents; and principals of schools, who have in most cases direct responsibility for the work of all of the teachers employed in the building, for the care of the building and its equipment, for the discipline of the pupils, and for the relationships with parents and other members of the community.

Very few school administrators are merely business executives. The most important duties of superintendents and principals, indeed, are in connection with the supervision of teaching, including not only an in-

spection of the teachers' work to determine whether it is good or poor, but also constructive efforts toward its improvement. The coördination of the work of the various schools and teachers which constitute the system is also an important phase of the superintendent's duties. In increasing measure, too, he is being looked upon as the "liaison officer" who keeps the schools and the public in close touch with one another. He is not only the official representative of the school board in its dealings with individual teachers and pupils; he is also the spokesman for the schools, the teachers, and the pupils in their relationships to the school board and the public.

The rapid growth and development of public education have given to the administrative and supervisory phases of school work an outstanding importance, and it is small wonder that some of the best known names in the history of American education are the names of men and women[1] who have won distinction as organizers and administrators of educational institutions and systems.

First appointments to administrative and supervisory posts are made, almost without exception, from the ranks of the classroom teachers, although it often happens that young men on entering the public-school

[1] In addition to such men as Horace Mann, Henry Barnard, W. T. Harris, Charles W. Eliot, and others mentioned in the preceding pages, the following are among those that deserve special recognition: Cyrus Pierce (1790–1860), first principal of the first State normal school (Lexington, Massachusetts); Francis W. Parker (1831–1902), once superintendent at Quincy, Massachusetts, and later principal of the Chicago and Cook County Normal School (now the Chicago Normal College); Edward A. Sheldon (1832–1897), founder and until his death principal of the Oswego State Normal School; James B. Angell (1829–1916), for many years president of the University of Michigan; James M. Greenwood (1837–1914), who made a distinguished record as superintendent of schools, Kansas City, Missouri; and William H. Maxwell (1852–1920), who was for several years superintendent of schools in Brooklyn, and who became the first superintendent of the schools of Greater New York.

service will combine teaching and administration at the outset, especially as principals of small high schools. Superintendents and assistant superintendents are usually recruited from the principals' group. College and university presidents have usually served as deans, and to the deanships they were earlier "promoted" from professorships. Within recent years, while the policy of demanding teaching experience as a prerequisite for administrative and supervisory appointments has been retained, there has been a growing tendency to require specialized and technical training for administrative and supervisory work. The graduate students in the teachers colleges and university schools of education to-day are very largely mature men and women who have served successfully as teachers and principals, and who are now preparing themselves for the "more advanced" administrative and supervisory posts.

Recent movements toward a larger recognition of the direct teaching services. — There is a general conviction that the contrasts between teaching on the one hand and administration and supervision on the other hand have been too sharply drawn. In many cases, indeed, there has been no way in which to reward exceptionally meritorious teaching except to take the successful teacher from the classroom and from actual daily contact with boys and girls, and make of him or her a supervisory or administrative official. Especially unfortunate, and recognized as such by administrators and teachers alike, has been the tendency toward the "factory system" in school organization, — toward a "hierarchy" of authority and responsibility which makes the school board a "board of

directors," the superintendent a "general manager," the assistant superintendents so many "foremen," and the principals equivalent to "bosses," while the teachers, to complete the picture, have the status of "hands" or routine workers. The protest against this tendency of the modern highly-organized school system to follow the pattern of industrial development has led to several plans and proposals for reducing the danger and for insuring to the teacher a status that will be consistent with the responsibility which always rests upon him and which no devices of "overhead" organization can significantly diminish. A brief reference to some of these plans and proposals may form a fitting conclusion to this volume.

The good work of professional organizations. — In the first place, the development of a clear-cut professional consciousness on the part of teachers is proceeding apace with the rapid growth of teachers' organizations which make no distinctions as to "rank" in the service and which aim to bring the collective judgment of the whole profession to bear upon the solution of its problems. (See pp. 309 ff.)

Teachers' councils. — Another important movement is reflected in the organization of teachers' councils which represent the classroom teachers (usually by delegates elected from the various schools) in the determination of the larger policies concerned with the organization and administration of the system. The tendency, it should be noted, is to give to these councils a real responsibility for proposing educational policies and for evaluating and passing upon the policies initiated by the administrative staff or the board of education. In this

way, the judgment and opinions of those who are closest to the problems of the school will have an authorized channel for effective expression.

A recognzied status for the successful teacher. — A proposal of far-reaching significance is to do away with the distinctions that have heretofore been drawn among the several branches or "levels" of the teaching service, — distinctions between "rural" and "urban" teachers; among "primary" and "upper-grade" teachers, "elementary," "high-school," and "college" teachers; and among "teachers," "supervisors," and "administrators," — and to institute distinctions of another kind, based not upon the age of the pupil taught, nor the type of community served, but upon *preparation for*, *growth in*, and *success in* one's work, wherever that work may lie. Some definite suggestions toward this end have been recently proposed by Dr. Charles Russell.[1] Under Dr. Russell's plan, all teachers entering the service would be recognized as "Novices," and whether they taught in rural schools or urban schools, elementary or high schools or colleges, they would be held to a period of apprentice-work under close supervision. He assumes that during this period, too, they would be continuing their education. After an appropriate "novitiate," the successful teacher would pass to the grade of "Journeyman." On this level the supervision would be less intimate, and the teacher would have a larger measure of freedom, but the stimulus of further education would still continue, and the teacher would reach the stage where he or she would

[1] CHARLES RUSSELL: *The Improvement of Teachers in Service.* Bureau of Publications, Teachers College, New York City, 1922.

have completed an advanced course of professional study and thus be qualified for the next advancement to the status of "Graduate teacher." On this level, the supervision is still further relaxed, but again the stimulus for growth is ever-present. With evidences of growth and clearly demonstrated success in classroom work, the final grade of "Master-teacher" may be attained. It is Dr. Russell's proposal that appointments to important administrative and supervisory posts be limited to Master-teachers, but that a large proportion of those who reach this status be also retained in the classroom service as "Master training-teachers," "Master teachers of children," and the like, and that no essential distinctions either in rank or in salary be drawn between such teachers and the administrative and supervisory officers.

In the great work of teaching nothing is trivial.[1] — What these movements and proposals have in view is that the actual work of teaching may afford for devoted and successful service rewards and recognitions that will not suffer by comparison with the rewards and recognitions offered by other occupations. There are in reality no "humble posts" in the teaching service. In the broad range that this service covers there is no item or activity, however small and apparently unimportant, that does not call insistently for keen thought, clear vision, abundant resourcefulness, ready initiative, penetrating sympathy, and self-sacrificing effort. Shot through with fundamental meaning are the words of William Lyon Phelps, — "Nothing is too minute or trivial that concerns the great art of teaching."

[1] W. L. Phelps: *Teaching in School and College*, p. 15. Macmillan, 1915

Questions, Exercises and Problems

1. If you have already made a choice of a specialized field of service, write out very clearly the reasons that led you to this choice. If you are still considering the choice, what considerations are uppermost in your mind?

2. Recall any particular difficulty or misconception which you have had in school and describe the teacher's method of dealing with it and with you.

3. When were you most unlovable as a child? What things helped you to rid yourself of unlovable traits? If you have younger brothers or sisters or both, where are they in the process of growing up? What are their lovable and unlovable traits?

4. What are your individual objections to those specialized fields of teaching which you have decided not to follow?

5. Taking the various service fields as outlined in the text, find how many persons are engaged in each field in your home community, in your county, in your state. In how far have the chances for employment influenced your choice of a specialized field of teaching?

6. Interview some school administrator known personally to you to find out specifically about his or her education and experience. Why has he or she succeeded?

7. Glance back at the chapter headings of this book, calling to mind the main points of each chapter. In how far has it been successful and in how far has it failed to *introduce* you to teaching?

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1. Goal to be attained
   a. [illegible] or skill
   b. Knowledge.

2. Look at it from Rank of Learner
   a. Animal learning
   b. human "

3. Type of learning involves.
   a. Sensory motor learning.
   b. Practical learning
   c. Associative "
   d. [illegible] "

4. Method used.
   a. Trial & error.
   b. Immitation.
   c. Reflection

5. Provision for learning
   [illegible] instincts
   [illegible]

Sense of Psy - Grad Trials
from beginning to end
Comparative Psy = Comparison of An
& " " hum

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